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ART. I.—*The Germ Theory of Disease.* Lectures delivered before the House-Staff and the School of Nurses at Charity Hospital. By W. M. CHAMBERLAIN, M D., one of the Obstetric Physicians to the Hospital.

One of the great discoveries of modern science is the immense variety and number of living forms which people the world. As the telescope directed upon apparently formless bands of light in the sky has shown that they can be resolved into multitudes of separate stars, so the microscope directed upon apparently structureless masses of matter has shown that they consist of the forms of living things, or the remains of things that have lived. Thus the chalk formation, which makes up a large portion of the island of England, is seen to be composed of the skeletons of minute infusorial creatures, unnumbered as the sands of the shore, and much more minute. The glass which shows the grain of sand, like a rock of crystal, with sharp angles and shining facets, will also show a little thread-like body, which beneath a higher magnifying power is seen to have parts and structure and organs, and to be endowed with the power of independent movement. With each improvement of the glass new orders of minuter beings are revealed. That which twenty years ago, with an objective of one-eighth of an inch focus, seemed mere lifeless matter, we can now, with a fiftieth power, see to be perfectly organized and endowed with life.

These little living creatures pervade everything and can

not be excluded. The water in which a wisp of hay has been thoroughly boiled may be carefully filtered and closely sealed in a bottle, and placed in the sunlight. In a few days it will be found to be full of living things. These living things are all about us, in the food we eat, in the water we drink, in the air we breathe. They enter our bodies through many avenues, and wherever they find conditions suitable they reproduce their kind, and multiply in numbers which transcend arithmetic.

A man may eat a little piece of pork infested with trichina, and in a few days the muscles all over the body, which should be red, will become quite gray, with little white spots, each one of which the microscope will show to be a white worm coiled up in a case. We touch an infected hand, and in a few days the softer portions of the skin may be marked with little red furrows, from the end of each of which an acarus may be lifted out. Twelve thousand eggs have been found in one out of the thousand joints of a tape-worm. A red point appears on the neck of a child, which day by day widens out as the ripples round a stone dropped into the water. The circumference of the patch is reddened and elevated. Scrape the skin on the margins of this ring-worm and you will find, under the glass, multitudes of living and growing things. In the blood of patients sick of relapsing fever may be found multitudes of little living spinal filaments, called the spirilla, first detected by Obermeyer, in 1868, and verified by many other observers.

Whatever has been hitherto said is accepted and undisputed truth. The forms of living parasites which I have named are so coarse and large that any one may be sure of their presence and their character. The researches of Pasteur, in France, and of the commissioners appointed by the English government to inquire into the causes of the cattle plague, have shown that the diseases which destroy the vines of France and the live-stock of England are occasioned by

multitudes of parasitic organisms, living upon and in and at the expense of the higher forms of life. In proportion as we descend in the scale of living things, the conditions necessary for existence become fewer and more simple, and therefore the number of things actual or possible increases. Some of you will remember the fable of Æsop, which gives the conversation of a friendly lioness with a vain little rabbit. The rabbit says, "I sometimes have five or six young ones at a birth, you have only one." The lioness replies, "Only one, but that is a lion!* The higher ranks of human society are comparatively sterile. Thus the world of living things may be compared to a pyramid. One slender stone represents man at the apex. Layer by layer the structure widens downward, increasing in number and in area by a geometrical ratio. The fact that certain diseases have been shown beyond question to depend upon the presence of parasitic organisms in the system, has suggested the inquiry how far disease in general may depend on such a cause. To this inquiry such men as Tyndall, Burdon Sanderson, and Lister, and many others in Great Britain and on the continent, have given most careful and ingenious studies, which have developed many facts and many lines of argument, which woven together are known as the Germ Theory of Disease.

This is the subject which I intend to present to you this afternoon. First we will consider what is meant by communicable disease, or contagion; then what is meant by an organism, and what are the common phenomena of organisms, and how their action differs from chemical action; then we will review some of the chief phenomena of communicable diseases, and show how they are better explained by supposing them dependent upon the presence of foreign or-

* The shad deposits, it is said, 1,250,000 eggs; the whale has but one or two calves.

ganisms than in any other way. In this latter portion of my lecture I shall mainly follow the order in which Doctor Maclagan, of Oxford, has treated the subject in his recent work, and shall often use his words. To this treatise I would refer you as a very able and interesting book.

Communicable diseases are those which in any way pass from one person to another. Some are strictly contagious, because practically they are not communicated except by the contact of some part of a sick with some part of a sound body. Such are the venereal diseases and the itch. Some are contagious and infectious, that is they are communicated by contact and by presence without contact. Such are called endemic when they affect the dwellers in some separate locality, and epidemic when they pass from one community to another, finding many subjects in each. Epidemics are the great scourges of society. When the epidemic influence has been intense, communities, races, and nations are swept off as if by fire or whirlwind. Every susceptible subject is affected with the disease, which does not stop as long as material remains. An epidemic becomes virulent in proportion as a community is crowded. Undue crowding generally begets epidemics, which thus hang about camps, ships, jails, and hospitals. This fact is recognized in the names "camp fever," "ship fever," "jail fever," "hospitalism."* All these

* In 1828, in the march from the Pruth to the Balkan—the same which the Russians are making just now—they lost 80,000 men, mostly from fever and cholera. Ships have been occasionally seen floating idly over the sea, upon which every soul had perished by yellow fever. In the paper of this morning (May 27th) it is said that the Turks in the fortress of Silistria are dying from typhus at the rate of a hundred a day, and at Bagdad from plague at the rate of five hundred a day.

Indirect War Losses.—During the Crimean campaign of one year and a half 341,000 men were buried in the district of Taurida, which includes the Crimea. The Russians lost 170,000 soldiers, the English, French, and Turks, 156,000; and there were 15,000 Tartar victims. Of this total 324,800 were interred in the Crimea, including 210,000 in the neighbor-

diseases are fevers in their type, and now it is coming to be believed that all fevers are also of this class of diseases; that is that they are the result of some influence which passes from one form of living matter to another.

No question can be more interesting than the inquiry, What are these influences? what their modes of transmission and of action? We have said that they are believed by many to be minute organisms. What, then, is an organism? The answer is: A distinct and separate living form, it matters not how large or how small. An organism has always some structure—it may be a very simple one—some adaptation of parts to functions by which it derives nutriment from its surroundings and appropriates to its own growth, and some mode of reproducing its kind. This *kind* is uniform and true. One generation, or one succession of generations, is just like another in form and function. They come into being, they live, they grow, they reproduce, they die, in the same way, each according to its kind. Whether the form be that of a cell, a disk, a rod, a ball, a hair, chemical analysis resolves them all into hydrogen, nitrogen, oxygen, and carbon, carbon not appearing a constant or necessary element. Thus

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hood of Sebastopol. Those killed in battle were but 30,000, and allowing an equal number for the losses from wounds, 281,000 must have succumbed from disease. The deaths of sick persons sent away from the seat of war were about 60,000 more, which makes the number of dead from the Crimean campaign alone over 410,000. It will be seen from the above calculation that out of some 410,000 soldiers who succumbed during the Crimean campaign, 30,000 only were actually killed in battle, some 300,000 dying from disease. How many of these deaths were entirely preventable had a more judicious and liberal use been made of medical assistance, it were vain to speculate; but of this there can be no doubt, that a well found medical staff, although apparently a costly item, is in the long run by far the most economical investment a nation undertaking a campaign can make. The loss of 100,000 or 200,000 trained soldiers from sickness is a very serious consideration, and one a nation proud of its reputation for science might well be ashamed of.—*Lancet.*

nitrogen and water (H. O.) are the materials of which they are made, the food on which they live and grow. The organisms which we are specially considering we will call, for convenience, contagia, or, in the singular, contagium, and the stage of their existence in which we are most interested in them is their first or germinal stage. Even when fully developed, they are, for the most part, microscopic objects; a few only, like the trichina, being visible to the unaided eye. In this germinal stage they are so minute that they appear as amorphous granular matter. The germ of any animal life is in size but a small fraction of the creature which originated it or the creature into which it may develope, and a very small fraction of an object which is itself microscopic must be small indeed. It is only by recognizing the fact that they grow and move that we come to know that they are indeed living germs.

The evidence that they are the material of contagion is both direct and indirect, or inferential. The direct is contained in the observations of Drs. Bell, Chauveau, Burdon Sanderson, and others upon the fluids of small-pox and sheep-pox vesicles. These observers found that the lymph collected from these sources contained many small granular particles, and that when the lymph was mixed with many times its volume of water inoculation produced very uncertain results. Sometimes it would take. When it did so, the disease produced was as active and positive as that produced by the inoculation of pure, unmixed lymph. Oftener it would fail to take at all. This observation proved that the contagion was not soluble in water—in other words, could not be diluted.

Then it was found that if the lymph and water which had been mixed were allowed to stand awhile, the upper portion of the fluid appeared to be pure water, and no inoculation could be made with it; while the lower portion contained all the granular matter, and inoculation with it was always successful. This proved that the contagion resided in the

granules, and was not diffusible, as it would have been, if its properties were chemical. Let us now consider the phenomena of small-pox poison as contrasted with that of a chemical poison:

1. Of a chemical poison, a definite quantity is necessary to the production of any effect.	Of small-pox poison, the smallest quantity is sufficient to produce the fullest effect.
2. The severity of the symptoms and the extent of the local lesion are in proportion to the quantity of the poison taken in.	The severity of the symptoms and the extent of the lesions bear no proportion to the quantity taken into the system.
3. The quantity of the poison eliminated from the system or existing in it is never in excess of the quantity taken in.	The quantity developed in and eliminated from the system is vastly in excess of that taken in.
4. Of chemical poisons, a small quantity produces in a susceptible system no poisonous effect.	Of small-pox poison, the least quantity in a susceptible system may produce the direst effect.
5. The system, having recovered from the effects of one dose, another will be equally effective.	The system, having recovered from the effects of one dose, all future ones will be without effect.
6. The poison continues to act and to produce local lesions so long as a sufficient quantity is present.	The local lesion mends and the contagion ceases to produce its general effect, while much of it remains in the system.

Thus we see there are very marked differences in the behavior of a chemical poison and a contagion.

Let us now place the phenomena of a contagion in comparison with those of a germ, a vegetable seed, for example. A dry seed, so small as to be almost invisible, drops into the earth, which closes over it. A film of dried lymph, almost invisible upon the point of a lancet, is carried beneath the skin, which closes over it. The seed remains unseen in the soil, going through the process of germination. The lymph remains quiet in the skin, going through its stage of incubation. By and by the seed bursts the soil again where it was planted. By and by the contagion declares itself by a vesicle over the point of inoculation. The plant may grow and

spread until it becomes a tree, and the fowls of heaven lodge in its branches. The eruption may multiply until it covers the surface of the body. The tree will reproduce the seed which originated it a thousand-fold. The disease will reproduce the contagion which originated it a million-fold.

You may see a little downy seed, floating like a mote in the air, and you can not tell whether it is of a thistle or a silk weed, a dandelion or a groundsel; but when it has been received into the soil and grown again, you know that it will surely bring forth its kind.

You may send a susceptible child into a room where contagion, quite invisible, floats in the air, which may seem perfectly bright and pure. If you do not know before hand, you can not, for the life of you, tell what seeds are there. But wait a week and the face of the child will help you to a diagnosis. Measles will produce measles, scarlet fever will produce scarlet fever, and diphtheria diphtheria forever. Each seed has its own period of germination; so has each disease its own period of incubation. In both the changes are so slow and silent that the presence of neither is revealed to common observation.

The development of each is attended with the evolution or liberation of heat. Before the blush of fever comes to the child the thermometer shows altered temperature; before the shoots break from the moistened barley in the brew-house the malt heap feels warm to the hand, and may even give off a steam.

The continued growth of each exhausts the soil of its required nutriment. It takes years to do so in the case of the vegetable, but finally it is done. You can no longer raise tobacco in the tide-water lands of Virginia, and the eruptive diseases rarely occur twice in the same persons. In relapsing fever the disease retires until a fresh amount of pabulum is reproduced, even as apple orchards bear every second year.

The view that contagion consists in particles which are

the seeds of disease, rather than in a diffused and general contamination of the air, is well illustrated by Dr. Maclagan, as follows:

"A regiment of soldiers goes into action; the whole body of men is enveloped in the smoke of conflict, but only those fall who are struck by the invisible but flying bullets. So a number of persons pass through the chamber of contagion. All breathe the air, but only those are infected who inhale the floating and invisible germ. Obviously, the soldiers will fall in proportion as the bullets fly thickly; so will the person, who traverses an air when only an occasional germ is floating, again and again escape uninfected. But if the air be crowded with them he can not escape."

Dr. Erichsen has well shown this. His male accident ward in the University College Hospital is intended to hold fourteen patients, and to give to each 1,500 cubic feet of space, about the size of ward 8, female, in our building. He says:

"In the ward we have had many outbreaks of septic disease, pyæmia and erysipelas, invariably the result of the accidental accumulation within it, not always of too large a number of patients, but of too many cases of injury with wounds in a state of suppuration. The average number of open wounds in this ward is about seven, or half the number of patients it contains; and if the wound be not severe, such a number can be contained in it with moderate safety. But if they rise above this number, or if the majority be severe, then septic disease will certainly break out."

A single case of a certain variety and of aggravated character may set free germs enough to infect every susceptible subject who remains near it. I quote again from Dr. Erichsen, because no authority commands more general respect, and because, having been senior surgeon of one of the best London hospital for twenty successive years, his observations are of great weight. Referring to the ward above mentioned, he says:

"On January 17, 1871, a case of phlegmonous erysipelas of the leg was accidentally brought into this ward. As soon as the nature of the case was known it was removed, having remained in the ward only about two hours. At that time the ward was perfectly healthy, but a few days after a patient lying in the next bed to that which the erysipelatous patient had occupied, was seized with erysipelas. On the 22d I performed five operations on patients in this ward. Of these cases three were attacked by erysipelas on the 24th; the operations were of minor importance; but all of these cases died. On the 24th a patient was operated on for strangulated femoral hernia. He was seized on the 31st with symptoms of a low peritonitis, doubtless of erysipelatous character, and also died"

In this history we may note how the contagion reproduced its exact kind, after a period of incubation of four or five days. Contagia, like seeds, require a fitting soil for their growth; they require a fitting air for their preservation. Seeds kept for a long time in ordinary conditions lose the power of germinating. If this is true of a body so highly organized as the seed, it would be likely to be true of the contagium, and such is the case. On the other hand, seeds kept under favorable conditions retain their life a long time. One variety of wheat largely grown in this country used to be known as Egyptian, because it had been grown from seed found in the closed and muffled hand of a mummy thousands of years old. It is on record that a chamber, in which a child had died of scarlet fever, after having been fairly cleaned, was closed. The family went abroad for a year. When they returned, a child was put to sleep in this chamber, and in seven days it sickened of scarlet fever.

That which has thus been said of contagium, may be summed up as follows:

1. It resides in definite particles; so small as to be invisible; so light as to be easily borne about in the air.

2. In chemical composition it probably closely resembles the fluids in which it exists.

3. It is largely reproduced in the system during the course of the disease to which it gives rise.

4. The poison thus reproduced is identical in nature with that to which it owed its origin.

5. It is rapidly destroyed when fully exposed to the atmosphere.

6. When not so exposed it may keep its power for a long time.

With regard to their action on the fluids in which they live, it may be said that they absorb oxygen, and give off carbonic acid, like plants; that they are remarkably independent of the chemical constitution of the medium which they inhabit, provided that they can get oxygen; and that they take nitrogen from any source which contains it, and use it in building up their own protoplasm. By various authors they are assigned sometimes to the animal; some times to the vegetable kingdom, the more general opinion being that they are of vegetable nature.

There is a somewhat constant relation between contagia and the forms of living organisms, known as bacteria and micrococci. This seems to be that in fluids which convey contagion, these organisms which are of such size as to be readily examined by the microscope, will presently appear, and that in proportion as they so appear, the contagious properties disappear. Whether the bacteria and micrococci are a further degree of development of contagious particles or not, does not seem as yet clearly made out. At any rate the bacteria do not exercise the noxious influence on the human organism which contagia does.

If any animal fluid, which when fresh conveys contagion freely, like the serum of peritonitis, remain exposed to the air until general putrefaction ensues, bacteria are found in

it in great numbers, but it is then slightly or much less contagious.

We will now consider how contagia produce the phenomena of disease. The eruptive forms are the type of infectious diseases; as a group they possess the following characteristics:

1. Each has a tolerably definite period of incubation.
2. The most prominent symptom common to all of them is the fever.
3. Each possesses a characteristic local lesion.
4. Each possesses a pretty definite period of duration.
5. Each, as a rule, occurs but once in a life time.

The possession of so many features in common can only be due to similarity of causation. These common features may be explained on the theory that contagium particles are minute organisms requiring for their growth and propagation, the same materials as organisms in general, but having other requirements and actions peculiar to them as contagia. The chief demand made by organisms in general upon the media which surround them are for nitrogen and water.

Now it is evident that the propagation in the human system of millions of organisms having such wants must lead to very serious disturbances, for nitrogen and water are the two substances which are most essential to the growth and repair of all animal tissues. While the number is scanty, the effect is slight; the system does not show it; by and by they become so numerous that the system begins to show disturbance; the stage of incubation is at an end, and the invasion of disease begins. This stage is marked by a rise of bodily temperature and an eager demand for water. The accepted cause of the high temperature is—since the days of Virchow—believed to be increased tissue metamorphosis or change. But what is the cause of this increased tissue change? Before the entry of the contagium into the system there is no fever; after it, fever is always developed;

the contagium is, therefore, the cause of the fever and its various phenomena. A leading characteristic of the contagium is rapid reproduction, and in this fact we find the cause of the fever, and of its distinguishing signs, namely, increased waste of the nitrogenous tissues; increased consumption of water; increased rapidity of the circulation, and unnatural heat. We know that there is increased waste of nitrogenous tissues in two ways: by emaciation, or actual loss of bulk in the muscles, and by the increased elimination of urea; the latter is a general though not an invariable fact, because in some cases of fever the urea, though generated, is probably retained in the tissues by reason of suppression of urine, or is modified, and we have increased extrication of products allied to urea in nature, namely, leucine tyrosine and changed hæmatine.

"The contagium is an organism. As such it largely appropriates nitrogen in its growth and propagation. The albuminous tissues and fluids are the only sources capable of supplying the quantity of nitrogen necessary for the enormous growth of millions of organisms." There is no spare store of nitrogenous material for such consumption; it must be taken from that destined to the tissues, which must therefore lose whatever the contagium subtracts. Nitrogen exists in the body in three forms: in the albuminates formed in the stomach, and carried by the thoracic duct into the blood, to be appropriated by the tissues; in the tissues themselves; and in the product of the disintegration of the tissues. It is, therefore, constructive, fixed, and retrogressive albumen. I cannot here enter into the somewhat elaborate reasoning which shows that it is the constructive albumen which is appropriated by the organism of contagium; but the conclusion appears to be a sound and a necessary one, that the wasting which takes place in fever is due to the consumption of the constructive albumen by the contagium particles. This deterioration of the blood means impaired nutrition of

the brain; hence impaired nervous force: impaired nutrition of the stomach; hence defective digestion; while, at the same time, the great consumption of water by the developing organisms cuts off the supply for the secretions. Water is as essential to the nutrition of the tissues as nitrogen, and enters as largely into their composition. The growth of organisms, therefore, which largely consume water as well as nitrogen, will, in two ways, diminish the bulk of the tissues. Salkowski has shown that *during fever* there is increased elimination of potass, and diminished elimination of soda. After fever, diminished elimination of potass, and restored elimination of soda. The tissues which contain the potass are the muscles and the blood corpuscles, while the soda is mostly in the blood serum. The protoplasm of the contagium particles is built of the nitrogen and water of the blood serum, and has to take its soda with it; while the muscular tissues and the corpuscles, thus deprived of their supply of nutriment, perish by a rapid disintegration, the product of which is the potass, and the urea in the urine. The nutrition of the tissues takes place in the capillaries. The albuminates of the blood are elaborated in their course through the circulation to this stage; then the blood current is slowed, and its composition becomes unstable, ready to part with its nitrogen. On one side the albumen becomes fixed, while on the other it becomes unfixed. Decay and repair go on ceaselessly and simultaneously. On one side of the tissues the blood current is laden with constructive material, and on the other with retrogressive.

The moment at which the constructive albumen is undergoing the change which normally results in fixed albumen—that is, tissue—is that at which its nitrogen is most readily taken up by the contagium particles, which step in to appropriate that which should go to the tissues, while no such agency steps in to prevent the exit of the retrogressive albumen, which continues as before, and the blood being carried

by the increased rapidity of the circulation so much faster and more frequently through the urea-forming glands, the liver, and the kidneys, of course an increased amount is formed.

The increased action of the heart is due to the increased demand for nitrogen in the capillaries, to supply the doubled consumption by the protoplasm of the forming tissue, and the protoplasm of the developing and multiplying contagium organism, and this increased action produces increased retrogressive action, increased disintegration of tissue, increased formation and extrication of urea. The sequence runs: reproduction of the contagium, increased consumption of nitrogen and water, increased capillary blood-flow, increased tissue metamorphosis, increased elimination of excretory products. But some one of these doctors here is about to say that there is not always increased excretion of urea. This is true; but it is mainly true in the later stages of the febrile state, when, by reason of starvation, the constructive albumen is so diminished that it does not supply the demand from the contagium particles, which seize on the next most easily convertible form of albumen, the retrogressive, and consuming its nitrogen, cut off the supply of the urea producing glands. That this is sometimes one reason why a deficient amount of urea is excreted is probable, but it is not the only or the most prominent cause.

In many such cases it is sufficiently proved that there is an *excess* of urea in the blood and tissues; there is, in fact, more than usual; and this points not to a deficiency in the production, but to an impediment in the delivery. Bad cases of fever generally present, in symptoms, and, at the autopsy, close resemblances to those produced by advanced renal disease, as I have shown in my paper on the urinary organs in puerperal diseases. The existence of renal disease in those suffering from fever only increases the risk of defective elimination of excretory products, and the occurrence of so-called uræmic symptoms.

But suppression and uræmia sometimes occur in those whose kidneys are not, at the time of attack, supposed to be diseased; and many such persons recover and show no permanent disorder of the urinary function. In such cases the renal disorder must be held to be secondary to the fever, and evidently depends in some way upon the action of the fever poison. These cases generally show high temperature, great thirst, rapid pulse, delirium, convulsions, coma, scanty and high-colored urine, often albumen, renal epithelium and sometimes blood, the renal symptoms appearing only after some days of fever. What does this mean?

It means that there is a very large propagation of contagium particles, great consumption of water and nitrogen, rapid capillary change, excessive formation of excretory products, notably urea. We never find defective excretion of urea when the *quantity* of the urine is normal. The defect in excretion is due not to the lack of urea, but to lack of the water which must solve it and float it out of the system. The water has been withdrawn by the propagation of the contagium! Urea thus retained is an irritant to the kidney; it is, as our autopsy book shows, deposited upon the peritoneum, the pericardium, the pleura, and there sets up the serous inflammations of which we have unhappily seen too much in the past winter.

Dr. Maclagan thus sums up this condition: "The febrile state is *always* accompanied by increased *formation* of urea, by increased consumption of water, the two chief ingredients of urine. So long as the quantity of water at the disposal of the kidneys is sufficient for the purpose, there is *increased* elimination of urea. In some cases in which there is a large propagation of contagium particles, the balance is apt to be disturbed. There is great consumption of water in that way, and coincident great formation of urea. Like the Israelites of old, who were required to make bricks without straw, the kidneys have more than enough urea, and scarcely any water to form urine.

"If this abnormal state be not excessive, or do not continue too long, the difficulty may be tided over, with no more than an anxious and smart attack of fever, accompanied by scanty urine, but no very marked renal complication. If, on the contrary, the disturbance be excessive, and occur early in the attack, renal symptoms are inevitable, albumen appears in the urine, with casts and blood and uræmic symptoms, and the patient either dies or makes a very narrow escape." There are all shades and degrees of this process, as we know.

We have thus considered increased tissue changes as one sign of fever. The next named in order was increased consumption of water. Very little more need be said about this. I have only to remind you that organisms are very largely composed of water. Water is a portion in all their food. Their structure is built of nitrogen and water, three-fourths water. The carbon which is taken is burnt up in maintaining heat, or extricated in the bile and fæces, or sometimes deposited as fat. All growing organisms take food in fluid form. All seeds and bulbs will sprout in water. You can't feed babies on hardtack. Hence comes the intense craving for drink in fevered persons. They drink and drink again water which is not rendered back by the burning skin or the deficient urine. What becomes of it? It is consumed by the rapid propagation of germinal contagion in the tissues.

Increased rapidity of the circulation, named as the third sign of fever, is due to the necessity of increased action of the heart, caused by the great demands made by the process going on in the tissues, the rapid multiplication of the contagium organisms, and the rapid disintegration of tissue. This disintegration goes on also in the heart itself, malnutrition of its substance, and feeble as well as rapid action being present just in proportion to the degree of the fever—that is, just in proportion to the extent to which the development of the contagium goes on.

Since increased rapidity of circulation concurs with increased production of urea and increased degeneration of tissue, we see in the two the probable cause of the increased temperature.

Another factor, however, is indicated by what we know of the periods of active development. Thus the heat of plants rises just before blooming; perhaps because at such times the tissue change is rapid, and in the fabrication of solid tissue out of fluid nutriment the latent heat of the fluid state is given off. That this is no small amount, the farmer knows who places shallow vessels of water in the cellar, when the night is very cold, to protect his potatoes. Before the water can become solid, it must give off a thousand degrees of heat. Thus we see how the essential conditions of the febrile state, enumerated some time since, viz., increased disintegration of the nitrogenous tissues, increased elimination of urea, increased consumption of water, increased rapidity of circulation, and unnatural heat, are, on the basis of the germ theory, all the results of the rapid multiplication of organisms. No other theory with which I am acquainted shows so well how these occur.

We will now see how this theory accounts for other symptoms less constant and essential. Thus the rigor or sense of shivering which marks the invasion of disease coincides with an increased temperature, as shown by the thermometer, and increased rapidity of the circulation, caused by the development of the contagium, and results from a spasm of the minute arteries all over the body, a conservative effort of nature to shut off the morbid supply of the fuel to the fire thus enkindled. This attempt to limit the disease by cutting off its supplies continues for a variable period (from a few hours to a few days), and during its continuance there is a capillary torpor and a positive anæmia of the whole system, except its visceral portions, which produces the livid or ashen hue of the skin, the muscular tremors, the headache,

and, in some cases, even convulsions, even as it has been shown that sudden anæmia of the brain is the mode by which epileptic and hæmorrhagic convulsions are produced.

To the same cause is due the rachialgia and the arthralgia of the early days of fever. At length this state of capillary spasm passes off, and capillary dilatation follows; reaction more or less commensurate to action. Flush, heat, and injection replace chilliness and lividity, and restlessness supercedes pain; the earlier nervous symptoms now give place to delirium, caused by cerebral mal-nutrition dependent upon the great demands upon nutrient material which the developing organisms make, and when tissue disintegration has stored the blood with urea, which defect of water prevents the kidneys from eliminating, coma and uræmic convulsions may supervene; or, if the cardiac nutrition and the cerebral nutrition are equally depressed, coma and the typhoid state, ending in death by asthenia.

The changes noted after death correspond to this theory. They are: cerebral atrophy, diminished bulk of the brain tissue, serum being effused into the cavity of the arachnoid and ventricles to prevent that vacuum which, in the brain at least, nature abhors. Parallel with this is the softened and friable condition of the heart, chiefly on its left side, loss of bulk in all the voluntary muscles, softening and disintegration of the spleen. It will be noticed that the organs which are held up to constant work, like the heart and liver, do not shrink in size like the quiescent voluntary muscles, but they become soft and pulpy.

This theory derives further support from consideration of the method of treatment, which are approved by the best clinical experience. The two leading indications are to subdue the pyrexia and to maintain nutrition. The most effective means of subduing the pyrexia is by the direct application of cold, which checks the growth of the contagium organisms. Perhaps we have yet much to learn in the free

use of septicides, as salicyitate of soda and carbolic acid which out of the body and upon its surface are known to destroy organisms of low vitality. The other indication is simply to supply albuminous food to compensate for the consumption of nitrogen and water, by the growing organisms. This we do in giving freely milk and animal broths.

An organism which lives in and at the expenses of another organism is a parasite. Contagia, therefore, are parasites. We will consider them awhile in that light. All animals are liable to parasites, and the parasites of one differ from those of another. Man, the horse, the cow, the dog, the cat, and the rabbit, each has its peculiar parasitic enemy, not found in the other. Moreover, each parasite has its local home. One is found on the skin, one on the mucous membrane, one in the liver, one in the brain, one in the kidney. Each has a nidus, in which it is, and out of which it is not, reproduced. Thus we find that the distinctive features of each specific disease are certain local lesions of some tissue or organ. The locality within which the parasite finds the conditions necessary to its propagation is a limited one; beyond the conditions of growth common to all organisms, it requires for propagation something peculiar to itself, and that something is found only in a certain nidus. A coarse illustration of this idea we have in the shad, which roams the sea in common with unnumbered kinds of fish, but for its propagation it must find the shoals and sandy reaches of the fresh-water river.

For the production of the eruptive fevers, two factors are then necessary. The first is the contagium, and the second is the presence of that special, and probably localized condition which is essential to its fecundation and propagation, as distinguished from its organic growth. In virtue of this second necessary factor, we find explanation for the following characteristics of the eruptive fevers: (1) Their comparative rarity; (2) their characteristic local lesions; (3) their

different degrees of severity and contagiousness; (4) the fixed duration and the cessation of the febrile symptoms; (5) the phenomena of the crisis; (6) immunity from a second attack.

It is the lack of the adaptation between the germ and its conditions which causes the infinite majority of them to fail of reproduction, just as Lockhardt has computed, that a pig will eat 1,340 ova of the tape-worm before one will find the conditions necessary for its development into a bladder worm. A man has small-pox. An infinitesimal portion of lymph from one of the uncounted vesicles introduced into the arm of another person gives to one or more germ the chance of reproduction, but untold numbers must perish for the lack of such a chance. Nothing is more unstable than the molecular constitution of a germ except in its appropriate home. Of 10,000 set afloat in the atmosphere, 99 per cent. are devitalized by the contact, and 99 per cent. of the remainder fail of finding a nidus in which they may reproduce their kind.

Again: of each eruptive fever, the most positive characteristic is its local lesion. Of scarlet fever, the angina and the rash; of measles, the coryza, bronchitis, and rash; of typhus, the rash; of typhoid, the tumefaction of the agminate glands of the small intestines; of cerebro-spinal fever, the meningeal congestion.

Each disease will uniformly produce its specific lesion. The specific lesion of any one will never exist without other evidence of the presence of that individual disease. The contagium is represented in the lesion; as each parasite has its area in which it is propagated, so each eruptive fever has its nidus where its organisms are reproduced. This nidus will share, in common with all the rest of the body, the general effects of the presence of the parasitic organism. It will also have its own series of phenomena dependent upon its propagation.

Whenever in nature there is special formative effort, there is a special force, an increased vascularity, a heightened nervous endowment, a rapid interchange of molecular action. In all the higher animals fecundation determines an increased flow of blood to the maternal organs. In the flowering plant the heat of æstivation is marked. Such hyperæmia as the fecundation of thousands or millions of germs occasions, is adequate to produce the inflammatory mischief which constitutes the local lesion. The occurrence of a local lesion in connection with the eruptive fevers thus becomes an additional argument in favor of the view that the poisons of these maladies are living organisms. And, if this is the case, it is in the seat of the local lesion that the contagion should be found, if it can be at all detected, most abundantly.

We find that the local lesion of diphtheria has been carefully studied to the following conclusions: The poison of diphtheria is a parasite; the nidus, which is the second factor in the disease, is the mucous membrane of the air passages; the intensity of the fever and the extent of the local lesion are dependent on the same cause—the amount of the contagium reproduced; an abundant growth of contagium gives rise at once to a severe local lesion and severe constitutional disturbance. Oertel, Nassiloff, Von Recklinghausen, Klebs, Weber, and others substantially agree in the statement that the local lesion is essentially an infiltration of the affected tissue with granular matter found to consist of micrococci. At all stages of the disease, and in all the affected tissues, these organisms are detected. According to Eberth, without micrococci there can be no diphtheria; and according to Nassiloff, it is to the occupation of the lymphatics by masses of micrococci that the lesions of diphtheria are due. In like manner Orth, Hüeter, Lukomsky, and Von Recklinghausen have shown that the erysipelatous process is invariably associated with the presence of micrococci in the inflamed skin; and Orth that the infiltrating fluid of

the swollen parts contains an enormous number of bacteria, as well as the lymphatics and lymph spaces. Keber, Cohn, and others have demonstrated that the fluid of small-pox pustules contains minute organisms. Weigert found the same in the lymphatics, near the pustules, and declares their identity of characteristics with micrococci. Klein experimented with sheep-pox with the result of finding the recent lymph of the pustules—the primary pustules produced by the inoculation of that lymph, and the secondary pustules which followed inoculation—all contained numerous small, highly-refracting granules, exhibiting molecular movement, and, when kept at a temperature of 90° F., undergoing such changes as are seen only in organisms, and that the changes in the cuticle which constitute the specific lesion of the disease, are invariably associated with the development of these minute organisms in the skin. Klein also demonstrated that the bowel lesion of typhoid fever is associated with the development in the follicles of Lieberkuhu, in Peyer's plates, in the veins and the lymphatics, of masses of minute organisms.

The analogy of some other superficial lesions not associated with fever may be cited in this connection. In tinia tonsurans, in herpes circinatus, and in favus and sycosis we have the development of organic parasites of a larger variety plainly shown by the microscope. In that affection called onychia, or run-around, we have a dissecting ulceration which raises the cuticle around the circumference of a circle; the microscope shows that the fluid in the ulcerating groove contains germinal bodies, and clinical experience has long ago shown that the disease is certainly arrested at once by touching the groove all round with a septicide like iodine or carbolic or sulphurous acid.

The different degrees of severity of the same form of fever would, according to this theory, be explained by supposing that the second factor, or the nidus, exists in very different degrees in different individuals.

The cessation of the symptoms and the immunity from a second attack are the consequences of the exhaustion of the pabulum which exists in the nidus, and the definite duration of the febrile symptoms has the same solution. The disease will be in proportion to the food for it, and, be it much or little, it will be exhausted in a certain period. If there be much food there will be much propagation; if there be little there will be less propagation. In any case the propagation will continue while the food lasts, and the greater or less amount is consumed by the greater or less amount of contagium organisms to which it has supplied the conditions of existence.

So, also, with the phenomena of the crisis, with the cessation of the propagation of the organism there is a sudden change of conditions. The abnormal demand for water ceases; the organs and tissues are allowed to appropriate all that is sent to them.

But prior to the cessation of the demand there has probably been taken into the system more water than is requisite for its own wants, the surplus being that which would have been required for the contagium if its reproduction had not ceased. Of this surplus the system relieves itself by perspiration, diuresis, or diarrhœa. The extent of the critical flow is, *cæteris paribus*, directly as the quantity of the surplus. Increased consumption of water is one of the chief phenomena of the febrile state; increased elimination of it is the chief feature of the crisis. In the former it results from the growth of the contagium; in the latter from the sudden cessation of that growth.

It is well known that all the contagious fevers are not equally contagious. Small-pox is more contagious than typhus—typhus than typhoid—while cerebro-spinal fever is very slightly contagious. This fact can not be explained on any view which regards the blood only as the field in which the contagium is reproduced. Each contagium can with

equal facility gain entrance to the blood. If that were all that is required, all the forms would be equally contagious and communicable.

The contagiousness of a fever depends on two things: first, on the quantity of contagium which passes into the surrounding atmosphere from the bodies of those suffering from it; and, second, on the readiness with which the contagium thus eliminated reaches its second factor in the systems to which it gains entrance. The more numerous the contagium particles in the atmosphere of a room, the greater the chance of one or more of these particles being inhaled by those who breathe that atmosphere. The seat of the local lesion is the seat of that fecundating action which follows the contact of the contagium with the second factor and results in its propagation. Hence the contagium is most abundant in the seat of the local lesion. The poison of small-pox is found chiefly in the pustules of that disease; of scarlatina, in the desquamating cuticle and the throat discharge; of typhoid fever, in the alvine discharges. Hence the contagiousness of each must, to some extent, depend on the seat of the lesion. From the bran-like epithelium of the skin and the throat the morbiferent particles are blown with every current of air and every expiration. Hence these diseases are highly contagious. When the emanations from the seat of the lesion do not readily reach the surface, contamination of the air is less certain. Thus the debris of the lesion in typhoid fever are delivered only in the stools. Hence, as is well known, local contamination of drinking-water, milk, etc., is the common mode of the propagation of typhoid fever. In cerebro-spinal fever the debris of the lesion can not reach the surface directly, hence the extreme rarity of contagion in this disease. In other words, that fever in which the local lesions expose the largest surface to the atmosphere will be the most contagious, and *vice versa.*

The evidence which supports the germ theory of disease

XUM

is supported by what we know of relapsing fever, a fever without characteristic local lesion. In 1868, Obermeier discovered in the blood of those suffering from relapsing fever a foreign organism having the appearance of minute spiral fibres. These are never absent during the fever, but speedily disappear after the new effervescence. Of this discovery Lebert says: "That a parasite so clearly determined as this, and never found thus far in any other disease, must be closely connected with the development and spread of the affection is hardly to be doubted." The characteristic of relapsing fever is the relapse. There is a febrile attack of six or seven days' duration, then an interval of a week free from fever, then another fever fit of shorter duration, then another interval, which is generally parmanent, but there may be as many as four or five relapses." During each period of fever the spirilla, as it is called, is found in the blood, and during each apyrexia it is absent. The fever must then be the product of the organism, or the organism must be the product of the fever. The latter can not be, for, in the character of a febrile paroxysm, it does not seem to differ at all from the fevers in which no spirilla is produced. The organisms must then be the cause of the fever. The characteristic of the fever has been said to be its relapse. To this it should be added that one attack gives no immunity from others. The explanation of the relapse is seen in connection with the fact that the organism produces no local lesion, and is found abundantly in the blood itself. The second factor then résides in the blood. The organism is propagated in the blood, and its propagation exhausts the blood of that specific something, which is the material in which the contagium finds its nutrition. When its pabulum is thus exhausted the contagion ceases to be propagated, and for the most part dies. Hence, the fever ceases. Directly the pabulum accumulates again in the blood. In a week a sufficient quantity is present to stimulate renewed propagation of the contagium, and the blood is shortly again exhausted. Many cases occur

in which from rapid elimination of the first factor, or tardy reproduction of the second, there is no relapse. Murchison has collected 2425 cases, in 724 of which there was no relapse. Litten records 400 cases; 396 had a first; 142 a second; 7 a third; 3 a fourth.

The mode is the same. In each case the second factor was reproduced before the first was fully eliminated. The oftener the exhaustion of the blood is repeated, the more tardy is the reproduction of the second factor, and thus there comes by-and-by a time when the elimination of the germs is complete before the reproduction of the nidus is established.

Each successive attack is shorter and milder than the preceding one, because there is less and less of the second factor.

Litten gives for duration of—

1st attack	6.6 days
2d "	4.9 "
3d "	3.1 "
4th "	3.1 "
5th "	2.3 "

It is further probable that an organism whose nidus is in a constantly renewed and changing fluid, like the blood, may fail to make a permanent exhaustion of its pabulum, as an organism whose nidus is in a fixed tissue does; hence, relapsing fever may not be like other fevers, in the fact that one attack secures no immunity from a second. That time alone, without the actual occurrence of disease, exhausts the pabulum of some diseases, is evident from the fact that persons who reach a certain age without contracting these diseases may be considered practically exempt from danger of contracting them. Thus, tonsillitis, scarlet fever and typhoid fever never attack the aged.

Thus, the theory which attributes the phenomena of febrile disease to the growth and propagation in the system of minute parasitic organisms explains so many, so varied, and sometimes so apparently contradictory facts, that it must be regarded as more complete and satisfactory than any other yet offered.

ART. II.—*Solid Food in Typhoid Fever.* By S. D. TURNEY, M.D., of Circleville, Ohio, Professor of Diseases of Women and Children in Starling Medical College, Columbus, Ohio.

All authors, I believe, unite in condemning the use of solid food during the course of typhoid fever, or in the earlier stages of convalescence from this disease. They point out many dangers from its use—indigestion, mucous enteritis, aggravated diarrhœa, hemorrhage, and perforation of the bowels.

Twenty-five years ago they were yet more rigid in their dietetics than they are to-day, giving their patients only solutions of gum, watery broths, or very dilute preparations of farinaceous foods.

Early in my practice I was struck with the similarity between many of the symptoms of the latter stages of grave typhoid fever and the effects of imperfect nutrition. I was led to believe that a sick man might be starved to death, and that some of the deaths attributed to this disease might be due to destruction of organs from unsupplied waste of tissue, that is from a process of slow starvation. A more liberal use of nutritious fluid foods, rich soups, beef tea, egg-nog and milk, by the greater mildness of the symptoms, the shorter continuance of the disease, and the increased number of recoveries, confirmed me in this belief.

Over twenty years ago I somewhere met a brief allusion to the value of solid food in typhoid fever, by Dr. Hooker, of Connecticut, now deceased. It was a mere hint, embeded in some article not strictly relating to this subject, and from the universal silence of the profession, it seems to have fallen unheeded. I am unable now to find the original publication, but his idea, as elaborated by myself, is this: As early in the disease as possible, before the stomach has lost its digestive power, the patient is to be given a substantial diet of plain, solid food, such as beef, mutton, roast potatoes, and toast, three times a day, at his usual hours of eating. The food should be well prepared and made as appetizing as pos-

sible. Little or no fluid is to be used during the meal. Notwithstanding the loss of appetite and aversion to food, the patient is urged to eat, if only a few mouthfuls. The habit of eating is to be kept up. In the course of three or four days the loathing ceases, the patient readily takes food, and frequently anticipates his meals with pleasure and enjoys them with positive relish, *pari passu*, the gravity of the symptoms subsides, and the disease running a mild and regular course, the patient convalesces at the end of the third week with scarcely any other therapeutic means.

As this was but an advance upon the line of my treatment, and as my own reasoning and observation had brought me almost to the same point, I adopted the practice, and after an experience of more than twenty years I think I can safely say that the dangers of solid food in typhoid fever are exaggerated or fanciful, and that there is no method of treatment of this disease, at least as it occurs in private practice, so satisfactory to the physician and so successful in result as this of Dr. Hooker's.

Contrary to the established belief, my experience teaches me that solid food, in this disease, is never an irritant; that it does not increase fever, nor cause indigestion, gastro-enteritis, aggravated diarrhœa, ulceration of Peyer's glands, hemorrhage, or perforation of the bowels. So far from this, solid food, when properly administered, is thoroughly and easily digested, and is a preventive of these accidents. I have every reason to believe, then, the irritation of Peyer's plates stops short of ulceration under its use.

In regard to the digestion and assimilation of the food, I can not be mistaken. In the many cases I have pursued this method, the food has in no instance been rejected from the stomach, the diarrhœa has ceased, and the fæcal discharges have become regular, semi-solid, and have borne all the characteristic appearances of healthy fæces. The food must then have been digested, absorbed, assimilated,

XUM

subserved the purposes of the economy, gone through the various stages of retrograde metamorphosis, and appeared at last in the excreta.

No one can fail to see the importance of thus maintaining the integrity and physiological activity of the digestive organs. The habitual secretion and subsequent resorbtion of pounds of saliva, bile, gastric, pancreatic, and intestinal juices can not be abruptly arrested without injuriously disturbing the whole animal economy. Such arrest must be a predisposing cause of local congestions and of vitiated secretions, which directly or indirectly aggravate already existing irritations, and increase the dangers of ulceration, hemorrhage, and perforation.

The use of solid food alone will maintain these functions in their full physiological vigor. A mistake is made in looking upon fluid foods as more digestible than solid. Solution and digestion are not equivalents. Digestion is a vito-chemical process—the results of the reaction of the various digestive juices of the alimentary tract—upon the food For the secretion of these juices, the process of mastication or of suction, and the rough contact of the semi-solid mass with the secreting surfaces, are necessary. This "roughness" is also necessary to excite the rythmic movements of the stomach and intestines, a movement essential to sound digestion and absorbtion. When fluid food—which is but the physical separation of the nutritive particles, and their distribution through a solvent—is exclusively relied on, the secretion of the saliva and other digestive juices is imperfect, and there is not sufficient stimulus to the muscular walls of the intestines. The solvent is taken up by the veins, and the undigested pasty residue suffers unhealthy fermentations and becomes a source of irritation.

Experience and reason both thus teach that the regular use of solid food in typhoid fever best preserves the integrity of the digestive functions, prevents local congestion of the

chylo-poietic viscera, saves the irritation of vitiated secretion and unhealthy fermentation, enriches the blood, and restores tissue disintegration.

It is impossible to over-estimate the advantages to the patient of this constant supply of assimilable nutriment, and the consequent maintenance of the integrity of the various organs—especially those organs whose functional activity are necessary to eliminate the poisonous results of retrograde metamorphosis. It places the whole system in the most favorable condition for resisting the destructive attacks of the fever, and supports and sustains until this self-limited disease has run through the various stages to its ordinary termination in health.

I do not wish to be understood that solid food is to be relied on to the entire exclusion of any other therapeutic means. It is only the essential factor in the treatment. At the outset, quinine in liberal doses clears up the diagnosis, and moderates the intensity of the fever. Opium is indicated to relieve pain, to give rest, and to control excessive diarrhœa. In grave cases, a mixture of chlorate of potassa and iron is a valuable tonic and hæmatic; but, in ordinary cases, the indications for medicinal interference almost entirely ceases by the middle of the second week. As a rule, by this time the appetite has returned, the diarrhœa has ceased, the fever has moderated, and the patient, if delirious, is restored to reason.

It is difficult to make just comparisons of different modes of treatment of disease, as the varying gravity of the affection and the surroundings of the patient very materially affect results; but I am convinced that the mortality in this method of treating typhoid fever will compare favorably with any other. Not more than one case in twenty-two, in an aggregate of nearly two hundred cases, has died.

The method of Brande has, in some hands, shown as good a record; but aside from the fact that his method is still

upon trial, and some reports are very far from being as satisfactory as those of Wunderlich and other advocates of the hydropathic treatment, however suitable it may be in hospitals, from want of proper facilities and difficulty in procuring skilled attendants, can never be made generally available in private practice. But there is nothing incompatible in the two methods, and in exceptional cases, when the increased temperature becomes a source of danger, the food treatment can be supplemented, if deemed necessary, by the cold bath. With the use of solid food, the fever generally terminates very exactly on the 21st day, ordinarily shading off from the end of the first week, until the thermometer at that time indicates no increased temperature. Full convalescence is prompt, as the patient is not emaciated and exhausted by excessive wasting discharges. In no instance in my experience has death come from diarrhœa, hemorrhage, or perforation of the bowels; and this alone, I think, is conclusive evidence that solid food is not an irritant in typhoid fever.

The success of this treatment will depend much upon the character and faithfulness of the attending physician. He must have a clear appreciation of its value, and early in the disease must be able to impress its importance upon the patient and his attendants. There must be no evasiveness, no broad latitude, no "about" in his direction, in regard to quality and mode of taking food. The directions must be precise and full, and he must insist upon a strict compliance with his orders. It is much easier to dose the sick man with drugs than to overcome his loathing of food, and for the first few days it will require all the authority of the physician to induce him to eat. But restoration of the appetite comes with the end of the week, and the dangers and difficulty are then over.

As this mode of treatment, to a certain extent, requires the intelligent consent of the patient, it is not as applicable

to young children as to adults. They can not be readily induced to eat. It is in this class of persons, therefore, that, in my experience, the disease ordinarily assumes its graver forms. Not that the mortality is larger—for the restorative powers of youth are greater than in advanced life—but the unpleasant symptoms are more pronounced, and the disease runs a more irregular and indefinite course.

It is in these cases that milk has a peculiar value. Milk is often classed among the fluid foods; but, as it coagulates and assumes a semi-solid consistence in the stomach, it does not properly belong to this class. It would probably be equally as efficient in the treatment of typhoid fever with the more solid food, if, in the act of taking it, it required mastication, and if the residue more actively excited secretion and rythmic movement. Being highly nutritious, and containing all the elements of repair of tissue, it is an excellent addition to the more solid diet, and can, with advantage, be combined with this in the adult, especially when the patient's appetite has returned. But milk alone can not take the place of solid food.

ART. III.—*Prophylaxis of Summer Complaints in Children.* By CHARLES W. OLESON, M.D. A paper read before the Columbus Academy of Medicine.

I would like to call the attention of the Academy this evening to a brief consideration of the prophylactic treatment of the summer complaints of children. I use the term summer complaints advisedly, as I do not intend to discuss the great diversity in the nomenclature of these diseases, which is too often based upon the opinions of individual writers rather than upon pathological appearances.

Let any one, curious in the matter, examine a dozen treatises upon children's diseases, and see how opposed are the views of German, French, English, and American writers upon this subject—a difference in belief as to causation, clini-

cal history, and characteristic lesions only equaled in diversity by their judgment as to what is the treatment required.

From the necessarily limited scope of this paper, the consideration of these important afflictions of the child's early life will be confined to an examination of their usual character and apparent cause, and to a recital of such agents, both dietary and medicinal, as shall appear best calculated to shield and protect the child.

Character.—The manifestations of these diseases are very different in character, both as regards the gravity of the attack and its course. We have in these *manifestations* all the varieties of gastro-intestinal disturbance.

A physician, upon entering his office on some summer morning, may find awaiting him a group of children, and upon inquiry may find that all are suffering from some form of derangement of the natural action of the stomach and bowels, and he may also discover that each differs in the amount or character of the disturbance from the others. One may be quite bright and playful, and only seek relief from a tendency to vomit its food. A second will have watery movements of an offensive character, with a cool, pale surface, and marked nervous prostration. Another may have simply frequent discharges of partially digested food, without apparent constitutional disturbance. Yet another has a depressed fontanelle, great restlessness, constant vomiting on receipt of nourishment or drink, while the passages will be grass-green in color, with bits of contained mucus and patches of bright blood. While still another, lying pallid in its nurse's lap, cold and clammy in collapse, its skin hugged to its bones, its sunken, staring eyes already dulling for its last sleep, has an appearance which, however familiar it may become, never shocks one the less.

From so simple a condition as hardly to demand attention to a consummation so grave as to startle all, the disease, unless cared for, is apt to remorselessly proceed.

The first departure from a state of health is undoubtedly an excited, abnormal sensitiveness of the nerves supplying the mucus membrane of the alimentary canal. This continuing, may give rise to marked increase in the disturbance until cerebro-spinal and sympathetic systems are alike involved. Following this comes lessened vitality and changes in the secretions, both in character and amount, and what was early a simple error in innervation becomes a very serious disease, difficult to treat, and of doubtful prognosis.

Causes.—What causes these conditions? What agents are active in shaping these diseases, which are of so serious a character as to carry off seven-ninths of the children under four years, dying in our four hottest months.

Frequently this can be traced to improper sewerage, insufficient ventilation, and the other recognized sources which contribute so plentifully to the generation of disease. But with these improved or removed, there are still factors producing these diseases, as potent for evil in our avenues as in our alleys, and which must be heeded and cared for if we are to furnish our little patients, in all conditions of life, suitable protection against ever-threatening evils.

In the discussion of this part of my paper, I shall supplement my statement of my belief as to these causes by the mention of what I deem the best measures to be taken for their prevention or relief.

1. *Proper alimentation.*—Every doctor experiences a sense of decided satisfaction in practicing in those families where the mother nurses the babies, and a corresponding anticipation of impending trouble where, from incapacity or other cause, artificial feeding is required. Where a child has the benefit of its mother's milk, and the child is well nourished thereby, the consideration of its alimentation becomes a minor affair. But there is an unfortunate class who are doomed to artificial feeding. So large is this class that the preparation of food for infants has become a business in

itself, and scores of preparations are in the market, with captivating names, and accompanied by testimonials so encouraging as to their ability to nourish, that they are eagerly sought by anxious parents, notwithstanding their value as food is by no means established. Being proprietary, their constituents are secret, and so but few physicians care to trust the issues of life and death to a sense of honor and responsibility which is purely mercantile. Our best substitute is in cow's milk, and with this carefully procured and suitably prepared, we have that which is, physiologically and chemically considered, a nearly perfect food, and the only one necessary or advisable until the child's molar teeth appear. My favorite method of preparing this substitute is as follows:

A young healthy cow with a young calf should be selected. If she is an Alderney or Holstein, so much the better, for their milk is very rich in cream. Some from each milking of such a cow should be set aside in a crock; after the cream has risen well, skim off the upper third, taking some milk with the cream; dilute this with one-third its bulk of pure water, and sweeten in the proportion of a teaspoonful of loaf sugar to a half-pint of the prepared milk. Should this constipate, brown may be substituted for the white sugar, or a little oat-meal may be boiled in the water before being added to the milk.

Dr. Dawson and Prof. Jacobi recommend substituting rich barley water for the water with which the milk is diluted. Proper attention to all these steps is necessary, and often what is apparently a slight unimportant departure from this formula will be sufficient to nullify the whole. A babe may thrive upon one cow's milk, and sicken upon that of two, while the substitution of the milk of an old cow may cause serious disturbance in the digestion of a child that was doing well on a young cow. This condition as regards age must be kept up, and should a child become ill when using milk from a cow to which it had been accustomed, I

should presume a change to a younger cow was indicated. This course pursued, and the child rigorously kept from the family table, trouble from its food is quite improbable.

Excessive Heat.—More potent than improper alimentation, even in causing disease of the alimentary canal in children, is insufficient protection from the excessive heat which we have during our summer months. This has been noticed and considered by most practitioners, but Dr. Davis, of Chicago, has more particularly investigated this subject by the aid of health report statistics, and has been able to show the terrible coincidence of excessive heat and infantile mortality. After twenty-five years of observation he has been led to regard the first week of continuous hot summer weather that, occurs after the middle of June, as developing the beginning of the bowel affections of children for that season, with as much certainty as any event in nature. I quote his words: "In the city of Chicago, June, 1874, in the week ending the 13th, with a mean temperature of 30° Fah., there was one death from cholera infantum; in the week ending the 20th, with a mean temperature of 72° Fah., there were three deaths from cholera infantum; but the next week the temperature ran up to 80° Fah., and there were forty deaths from cholera infantum In the same month in 1875, from the 1st to the 19th, the range in temperature was about 64° Fah., and with but four deaths in the nineteen days; in the next *week*, with a temperature of 70°, there were thirteen deaths from cholera infantum. Of the 1,796 deaths occurring from affections of the bowels alone, 1,339 were from summer complaint. Of these 1,339, 1,206 died in July, August, and September; 71 more died in June, and 34 in October, leaving only 28 deaths in the other *seven* months."

Dr. Davis is satisfied that 90 per cent. of the cases of serous diarrhœa and cholera infantum have their beginnings between the 20th of June and the 20th of July of each year.

How shall we counteract this tendency? By cooling well the child's sleeping room, protecting its head from the direct rays of the sun, by administering cooling baths and drinks, and by well-advised and judicious exercise in the open air, in a not too exposed situation. In addition to this, Dr. Davis recommends "that when the temperature of the evening continues above 70° beyond eight o'clock, that the whole trunk be enveloped in a towel wet in cool water, and left to dry out well through the night."

3. *Dental Irritation.*—While many dispute the assertion that the irritation of the gums during dentition is at all liable to cause any disturbance of the general nutrition, or any sympathetic abnormal action of the alimentary canal, another class, with equal opportunities for observation, as confidently assert their opinion to the contrary. During the summer months cases are frequently seen in which attention having been previously given to the proper alimentation and thermometrical protection of the child, the vomiting, diarrhoea, and nervous disturbance still continue.

How can we acccount for this upon any other hypothesis, especially when we find the gums tense and livid, and suitable attention to them is rapidly followed by relief of the trouble. Instead of being a purely natural process, devoid of any injurious tendency, I believe it to be a prime factor in the genesis of these summer complaints.

To relieve this tendency, I have employed, with constantly increasing satisfaction during the last seven years, a treatment recommended by Dr. Caro in a paper read before the New York County Medical Society. While this treatment may be familiar to all, yet so important is it that I will read what he says upon this point, for if there is one of my hearers to-night to whom it is not known, the time will be well spent:

"In the most severe cases of odontitis, either with or without ulcerated gums and loosened bowels, I have never failed

to relieve the child by the local application of brom. potass. Almost immediately after the first rubbing on the gums, from being turgid, swollen, and red, they assume their natural color, and a certain amount of ease is felt. Saliva commences to dribble, and, as if by enchantment, agitation, carpo-pedal involuntary motion, vomiting, and looseness of the bowels disappear. As the vomiting and diarrhœa in this case are not the consequence of gastro-enteritis, but of an excitement of the stomach and the intestinal mucous membrane, owing to the inflamed condition of the gums, I suppose it will never be cured either by the scarification of the gums, or by astringents or anodynes, as well as by brom. potass."

While I find this most satisfactory, I cannot agree with Dr. Caro as to the rapidity of the relief, and so in cases where there is no time to lose, I draw my gum lancet over the gum, cutting down to the tooth, and then give the bromide as supplementary treatment.

I have rapidly glanced at the agents most active in causing the departure from health in these serious and common complaints, and have directed attention to the measures applicable to their relief. Besides these measures I have resorted to medication but rarely, except in the case of one drug, the potass. bromide. This drug seems particularly adapted to the hyperæsthetic condition in children, and decidedly so when there is a tendency to irritation of the mucous membrane with increased secretion.

Different writers, commenting upon the bromide, give its action as follows:

Laborde says: "It exercises a predominant, and, to a certain degree, an elective, action on the nervous system, and especially upon the phenomena of reflex action."

Clarke and Amory say: "It is a vascular and nervous sedative." "Its primary effect in passing out of the system is to diminish all the secretions save the urine."

XUM

Bill, U. S. Army, says: "It is an anæsthetic to the nerves of the mucous membrane, and a depressor of their action."

Bartholow recognizes "diminution of sensibility of mucous membrane, which he considers is in part due to a local action of the salt in being eliminated."

So great has been my confidence in it as appropriate treatment to the conditions present in the outset of these diseases, that I administer it on their appearance from whatever cause, even going so far as to recommend my patrons to have a solution on hand, and upon the appearance of restlessness in the child order this sedative to be used. This is a solution of the bromide in syrup and water, so compounded that each teaspoonful represents one grain of the salt, the dose necessarily depending upon the age and susceptibility of the child.

As an adjunct to proper alimentation, protection from the effects of great heat, and supervision of the process of dentition, it acts as well as we can expect any one drug in any one condition.

CLINICAL RECORDS.

ART. IV.—*Case of Synovial Bursa of the Hyoid Bone—Pharyngeal Tumor treated by Incisions and Injections through the Mouth—Cure.* By CLINTON WAGNER, M. D., Physician to Metropolitan Throat Hospital, New York.

Mrs. S., aged 37, a native of New Jersey, consulted me, February 2, 1877, for hoarseness. She stated that between three and four years ago, she first noticed her trouble, which began with a tickling in the throat and slight cough. These symptoms increased, and at times she was conscious of a feeling of pressure internally, and upon the left side of her throat. About two years ago, the external swelling made its

appearance. Her suffering, at no time, has been great, her annoyance arising chiefly from inability to sing; her voice became rough, and the formation of the higher notes quite impossible. On examination, I discovered a swelling, about the size of a walnut, lying over the thyro-hyoid space, and which imparted to the finger the feeling of a fibro-cystic tumor.

A laryngoscopic examination revealed a large tumor at the base of the tongue, resting upon the superior and posterior surface of the hyoid bone, and extending from the lateral wall of the pharynx on the left, from which it appeared to take its origin, to beyond the median line, pressing the epiglottis backwards and to the right side; the left ventricular band was pushed beyond the median line, and the left vocal cord could not be seen. Whilst to the eye it presented, in the mirror, the characteristics of a cystic tumor, to the touch it seemed dense, firm and resisting.

The external tumor I regarded as either an enlargement of a small superior lobe of the thyroid gland, which sometimes fills the space between the thyroid cartilage and hyoid bone, or as a bursa which is occasionally seen at the acute angle of the thyroid; but I could not satisfy myself that there was any connection between it and the internal tumor.

After a consultation with Drs. Asch and McBurney, I determined to incise the pharyngeal tumor. This was done with the curved laryngeal sharp-pointed knife, by aid of the laryngoscope. The incision was made at about the center of the part exposed to view, from which escaped, with a spurt, as nearly as I could estimate without actual measurement, about two and a half ounces of a clear, amber-colored fluid, resembling synovia. The external swelling disappeared simultaneously with the collapse of the pharyngeal tumor, establishing the fact of the communication between them. I was prepared to employ the galvano-cautery loop, in the event of the mass proving solid instead of cystic.

A chemical and microscopical examinat.on of the fluid was made by Prof. J. N. S. Arnold, with the following result:

"*Chemical.*—Reaction neutral; white precipitate on boiling; dense precipitate with nitric acid; precipitate, with acetic acid in small quantity, the deposit being redissolved on the addition of an excess of the acid, therefore, no *mucine* present, but paraglobulin exists in considerable quantity.

"*Microscopical.*—Flattened epithelial cells, with large nuclei in large numbers, and of various forms; leucocytes; red blood globules; compound granulation corpuscles."

The sac refilled within a week, and I repeated the operation. The patient was requested to call at the expiration of three weeks, at which time the distension was apparently as great as before the first operation. An incision was again made, and the fluid allowed to escape. I then injected fourteen or fifteen drops of the tincture of iodine, by means of a hypodermic syringe, such as is used by veterinary surgeons, and to which I had attached a long, fine tube, bent to the laryngeal curve. Before discharging the iodine, I introduced the point of the syringe through the opening made by my knife, and directed it downward and forward to the hyoid bone. This operation I repeated three times, at intervals of fifteen, ten, and twenty-one days. Five weeks after making the last injection, no trace of the tumor remained. With the removal of the pressure upon the left side of the larynx, the parts resumed their proper places, the left vocal cord became visible, its action was restored, and the hoarseness disappeared. The hoarseness was due to irritation from pressure of the external branches of the laryngeal nerve, and the inability to give the higher notes, from want of action of the crico-thyroideus muscle supplied by the same nerve.

This case is remarkable on account of the pharyngeal tumor; bursæ mucosæ on the thyroid cartilage, at the point known as the Pomum Adami, are occasionally met with; bursæ

synoviæ of the hyoid are more rare. Cohen (Diseases of the Throat) mentions a variety found in the structures at the root of the tongue, which he calls the supra-hyoid bursa, situated on the upper border of the hyoid bone, between the posterior insertions of the genio-hyoid and genio-glossal muscles. It appears to be abnormal, and is only occasionally met with. He does not state that an internal tumor exists in these cases, nor can I find mention of this complication in any of the authorities whom I have consulted. In regard to the treatment of this variety of bursa, internal incision and injection have an advantage over the external treatment, the patient escapes a troublesome fistula and an unsightly scar.

53 WEST 35TH STREET.

ART. V.—*Cancer of the Bladder and Prostate.* By G. B. BALCH, M.D., of Yonkers, New York.

P. De F., aged fifty-seven years, was for many years an excessive user of alcoholic liquors. In June, 1875, he first began to have some pains above the pubis, with frequent desire to urinate, the stream being small; the pain was dull and heavy, but after urinating was quite severe.

Sudden desire to urinate, with dribbling, has occurred since May, 1876. The desire was so severe and sudden at times that it was impossible for him to find a place of seclusion. On the 20th day of September, with urgent call to urinate, blood spurted from the meatus urinaris, and, apparently, without being mixed with urine, very little pain accompanying the hemorrhage. After this, bloody urine continued to be passed and dribbled from him. When in a recumbent posture, the dribbling was constant; when in an erect or sitting posture, he could retain it and pass it naturally.

On the 5th day of October, 1876, I was first called to see

him; he had just had a severe hemorrhage. I found him pale and weak, with an anxious expression of countenance. An examination revealed an enlarged prostate that was exceedingly tender. On attempting to catheterize him he complained of the instrument hurting him so very much that I desisted, there being no urgent symptom that called for it. In the use of this instrument there was no force used, and not one drop of blood was drawn, and it could not have passed further than to the prostatic portion of the urethra.

There was no interruption of the stream in urinating; no pain in the head of the penis, or pricking sensation in any part of the urethra; no priapism; no enlargement of the penis or elongation of the prepuce, or prolapse of the anus. After a thorough examination, my opinion was given that there was a malignant condition existing at the neck of the bladder. About the first of November he ceased to have blood in his urine. The urine continued to dribble, and he passed none naturally. He lost his appetite at the time of the first hemorrhage, and never regained it; he continued to emaciate and lose strength.

November 15th he began to have bleeding from the mouth and nose, which continued to the end. On the 25th of November purpuric spots were noticed upon the lower extremities. He died on the fourth day of December, 1876. The treatment was iron and quinine, moderate stimulants, and carbonic water and milk for drink and nourishment.

His grandfather, on the maternal side, had osteo-sarcoma of the lower jaw. Autopsy six hours after death. The abdomen and lower extremities were covered with purpuric spots, the body was very much emaciated. The bladder contained about 8 oz. of clear, healthy urine. The peritoneum was quite adherent to the bladder, except a small part of the fundus. In that part connected to the bladder there were many small tumors about the size of a pea, and many of the same tumors could be seen in the walls of the bladder.

On opening the bladder its posterior and lateral walls were found very much thickened and infiltrated with these small growths. The prostate gland was very much enlarged and filled with this material. The mucous lining, particularly of the neck and lateral portions, was thickly studded with small tumors, from the size of a small Brazil nut to that of a small pea. The larger ones were located near the orifice of the urethra, and looked very much like organized blood clots; the others shaded off to almost white in the smaller ones. The ureters were enlarged, and were somewhat obstructed by these tumors where they entered the bladder. The kidneys were slightly fatty, and in the left was a dark hemorrhagic spot. The liver was slightly enlarged, but quite healthy in appearance. The rectum and other bowels were healthy. The thoracic cavity was not examined for want of time.

A microscopic examination has been made, and demonstrated the morbid condition to be encephaloid sarcoma.

ART. VI.—*Intra-Thoracic Cancer.* By J. H. POOLEY, M.D., Professor of Surgery in Starling Medical College, Columbus, Ohio.

On the 15th day of March, 1877, I was requested to see Miss C., æt 59, of whose case I received the following history: She had been sick for about three years, complaining of cough, pain in the chest, and gradual loss of appetite and strength. Simultaneously with, or a little later than the beginning of, her other complaint, a tumor had made its appearance on the left side of her neck, which, six months before my seeing her, had softened on the surface and had been opened by a physician, who supposed it to be an abcess, but nothing flowed out but blood and a little thin watery fluid; it has remained open ever since, and several other tumors, presently to be alluded to more particularly, have since made their appearance. She has been under the care

of several physicians, but nothing that has been done for her has been of any service, except that a year before, her cough, which was very severe, was benefited by some prescription of a homœopathic physician, and has never been so bad since. Family history good, free from cancer.

I found her in bed, considerably emaciated, with an expression of painful anxiety upon her countenance, but she said she had no pain anywhere, only a difficulty of breathing, and occasional cough, with almost complete sleeplessness, loss of appetite, distressing weakness, and a pruriginous or papular eruption over the whole surface, the itching of which tormented her beyond measure, and had caused her to scratch in such a way as to have marked her whole body and limbs with her nails. Though she was pale as well as thin there was no sallowness of hue, nor so-called cachetic appearance. Her pulse was one hundred, temperature normal, respiration, when quiet, very little quickened, but the least exertion made it very rapid and disturbing.

There was dullness on percussion over the front of the chest extending from the top of the sternum, and for two or three inches on either side of it; heart sounds weak and indistinct; breath sounds normal and somewhat puerile, or exaggerated on both sides. She had a rather troublesome cough, but very little expectoration, and that of a thin mucus. The tumor on her neck, already alluded to, was situated about the middle of the left lateral cervical region, as large as an orange, round, uniform, unlobulated, with a large, irregular crater form opening on its summit, with ragged, undermined edges, and the cavity filled with very irregular granulations with deep depressions between; it exuded a thin sanies of a peculiar faint, disagreeable odor. It was neither painful nor tender.

There was another tumor, about the size and shape of a hen's egg, just under the chin; this was quite soft, and about its middle was a purplish soft spot, which fluctuated quite distinctly.

There was another hard tumor on the anterior edge of the left axilla, about the size of the one under the chin, but rounder and nodulated; two small ones in the left breast and one in the right. None of these swellings gave her any pain, nor were they the cause of any complaint; she sought relief for her pulmonary troubles, her weakness, and, above all, the tormenting itching which made her miserable by day and by night. An attempt was made to remove a portion of the open tumor for microscopical examination, but owing to her extreme nervousness and timidity only such a small piece was obtained that it proved of no value. Notwithstanding this I felt very little hesitancy in making the diagnosis of intra-thoracic cancer. I prescribed iron and arsenic, a wash of hydrate of chloral for her prurigo, and one grain of codeine occasionally, to relieve her distress and promote sleep.

These means proved of benefit to her, the chloral abated the itching very materially, and the codeine proved a most admirable sedative, and gave her much needed sleep.

She went on without much change for a month, except that her dyspnœa slowly increased, but the cough became better and soon ceased to trouble her at all. By the latter part of April or first of May her dyspnœa became so great that she could no longer lie down at all, but sat constantly in an easy chair, and very soon she became incapable of straightening herself up in the chair, but sat bent forward as far as possible the whole time. There was no change in the thoracic signs, except slight increase of the dullness in front, while the heart sounds became feebler and more indistinct. During the month of May edema of the feet and legs came on, but never became excessive, being relieved by openings that formed spontaneously at points where she had scratched herself deeply; here superficial ulcers formed, which never healed up, but never spread or became troublesome, from which the dropsical fluid constantly oozes away

in large quantities. Her urine, which was repeatedly examined, never yielded any trace of albumen. She lost her appetite entirely, and experienced, besides, some difficulty in swallowing, so that she took no food at all, nothing except a little wine, and occasionally a very little milk; she refused all medicines except her powders of codeine, which she said were the only comfort she had. For many weeks it was a mystery how life was maintained.

About the beginning of June, a hemorrhage, of large extent, took place from the open tumor in the neck, which had been gradually ulcerating more deeply into the tissues.

This was checked by packing the sore with Rohland's styptic cotton; it recurred once or twice, but only to a small amount.

This hæmorrhage prostrated her very much, and for a few days she seemed to be sinking, but after that she rallied again, and continued to live in the condition I have described, and without any change worthy of note until July 31, when she quietly expired at 7 P. M.

Autopsy Twenty-one hours after Death.—Body very much emaciated, cadaveric rigidity well marked; no sallowness or icteroid hue of surface.

In addition to the external tumors already described, two more as large as large marbles were found on the left arm, near the insertion of the detoid; they were round, hard, even, and freely moveable under the skin.

Only the thorax and abdomen were examined. On attempting to remove the sternum, it was found firmly adherent to an abnormal mass of tissue underneath, and was with difficulty separated from it.

After accomplishing its removal the whole of the anterior mediastinum was found to be filled with a firm, white tumor, which crowded the heart backwards, and somewhat downwards, and encroached on either side for an inch or two upon the sides of the lungs. On removing the whole of the tho-

racic contents the following additional observations were made:

The cancerous mass occupying the mediastinal space was much thicker above than below; it not only overlapped the lungs on either side, but the roots of the lungs themselves were infiltrated to a slight extent. There was no enlargement or other alteration in the bronchial glands. The lower portion of the new growth was blended inextricably with the pericardium, which was thoroughly invaded by the disease. The interior surface of the pericardial sac, and the surface of the heart were thickly sprinkled over with hard, white patches, looking like irregularly disposed droppings of wax or spermaceti. Upon opening the cavities of the heart its walls were found infiltrated with the cancer; on the upper part or base of the ventricular walls it was fully half an inch in thickness. The muscular tissue of the heart was pale and flabby; the valves were perfectly healthy.

There was a small nodule on the convex surface of the liver, one in the spleen, and a much larger one attached to the uterus by a slender pedicle. The uterus, kidneys, and intestines and mesentery; with its glands, were healthy.

The large mass occupying the mediastinum was very firm, hard seirrhus cancer, the other deposits were softer, and some of them presented the characteristics of encephaloid.

Though not excessively rare, intra-thoracic cancer is sufficiently uncommon to make it desirable to record all the cases in order that future investigators may have extended material from which to study this interesting subject.

The diagnosis in this case, aided as it was by the co-existence of external tumors, was easy enough, but in many instances it is far otherwise; nor, I am sorry to say, does the present case afford any symptom that can be considered pathognomonic or clearly distinctive of the disease. The peculiar form of dyspnea, necessitating the constant bowed position of the patient, has been noticed in many cases of

mediastinal cancer, and together with extensive dullness in the front and median portion of the chest, would seem to be deserving of careful attention.

The utter absence of any peculiar tinge of skin, hereditary history, and the very slight amount of pain, are also important particulars, and militate strongly against the value of these signs so much and so long relied on in the diagnosis of cancerous disease.

Notice of a case of intra-thoracic cancer will be found in another part of this journal, and three recent cases are given by Dr. William Pepper in the Philadelphia Medical Times for August 4, 1877.

In addition to these and other cases scattered throughout the journals, I would take the liberty of indicating the following sources of special information for the benefit of those who wish to pursue the subject:

1. Cancerous and other Intra-Thoracic Growths. J. Risdon Bennet. London. 1872.

2. On Intra-Thoracic Cancer. By John Cockle, M.D. London. 1865.

3. Kreffens on Pulmonary Cancer. 1841.

4. Henri Gintrac. Sur les Tumuers Intra-Thoracique. Thèse de Paris. 1845.

5. R. Köhler. Inaugural Dissertation Tübingen. 1847.

6. Kilgour. Edinburgh and London Medical and Surgical Journal, October, 1844; and Edinburgh Monthly Journal, 1850.

7. Aviolat. Du Cancer du Poumon. Thèse Paris. 1861.

8. Dr. Budd. Paper on Cancerous Tumors within the Chest. Med. Chir. Trans. Vol. 43. 1859.

9. Struve. Diss. de Fungo Pulmon. Lips. 1839.

10. Lacaze Duthiers. Mal. Canc. des Pleur. Thèse Paris.

11. Schuster. Inaugural Dissertation. Ueber Thoraxgeschwülste. 1851.

12. Falcon. Encephaloid Diseases of Thymus Gland. London. Medical Gazette. Vol. 31, p. 731. 1838.

13. Symes Thompson. On Mediastinal Tumors. Medical Mirror, 1865.

No doubt some, perhaps important contributions have been overlooked, but I believe not many, and those here indicated will include all that are necessary for most purposes.

TRANSLATIONS.

Note on Preliminary Ischæmia. By Doctor NICAISE, Professor Agrégé to the Faculty of Medicine, Hospital Surgeon, Member of the Society of Surgery, etc. Translated from the French by Doctor BARNARD ELLIS, Alumnus of the College of Physicians and Surgeons, New York.

Since the communication made by Esmarch in April, 1873, to the Congress of German Surgeons which met at Berlin, the process of hæmostasia, extolled by this author, has rapidly spread, and has been the subject, in different countries, of numbers of publications. The boldness of this proceeding, and its comparative harmlessness, have excited the enthusiasm of those who have seen the application even in a few cases only. But soon an observation, fuller and made more attentively, has enabled us to judge better of the real value of this process, which will hereafter be the most precious means at the disposal of the surgeon.

In France, the method of Esmarch was made known by a publication in the Gazette Medicale, August 16, 1873. Some months afterwards, in November, Dr. Demarquay called the attention of the members of the Society of Surgeons to it. Since then it has been employed by surgeons generally, and has been the subject of a great number of works, and of very interesting experiments. It is thus important to see to-day what results have been obtained by the observation of many clinical facts and by experiment.

There are in the process of Esmarch two ends to be considered, viz., the driving back into the general circulation of the blood in the member to be operated upon (this is a sort of auto-transfusion), and afterwards the absolute arrest of the arterial circulation.

Many surgeons had already encircled the member to be amputated with the roller bandage.[1] Dr. Guyon, by the eleva-

tion of the member and the application of a circular band above the place to be incised, endeavored to drive back the venous blood. As to the circular band applied at the root of the member, it was employed in the middle ages as a means of hæmostasia.

In 1856 Dr. Chassaignac recommended, for the same end, the ligature, with tubes or rings of India rubber. Silvestri has applied this process in a more general manner, and insists upon the value of the elastic constrictor.

This rapid sketch shows that there is little upon which to raise a question of priority. I reserve and maintain the name of "the process of Esmarch" to this preliminary process of ischæmia, although the surgeon of Kiel did not create it all; but to him is due the credit of having united in one process means which had before been used separately, and by the generalization of the operative processes he has created truly a new method of ischæmia.

Application of the Appareil.—This appareil is composed, as we know, of a band of elastic tissue, and of a tube of plain India rubber the size of a finger. The elastic tissue may be replaced by a band of plain India rubber, though the first is preferable, because more easily taken off. The band is to be applied on the naked skin. Some surgeons, however, have first covered the skin with wadding, but the utility of this is not yet demonstrated; on the contrary, it may prevent us from knowing the exact degree of compression we make on the member. Perhaps we might put the wadding between the depressions so that the compression would be equal. We can conceive that, if the pressure is unequal, blood might remain in the vessels. It has been also recommended to put wadding between the fingers and toes when the appareil is used without giving chloroform, so as not to give pain by compressing one against the other. If the member has a sore on it, this should be covered with a plaster to prevent staining the band, which last ought not to be

stretched very tightly, as it is not necessary for the producing of ischæmia. Practice alone will show to each surgeon the degree of compression necessary.

The band should be applied evenly, each turn lapping the last about one-third, so that no part of the surface escapes compression. It is assumed that in this last condition there might be isolated clots of blood left in the veins, to be carried away on the return of circulation.

The *India rubber tubes* first used by Esmarch were inconvenient in several ways, and *ought to be* replaced. Dr. Chauval, Agrégé Professor at the Val-de-Gráce, has well shown the difficulties, both of its application and its removal. Besides that, an acute pain is felt in the region where it is applied, particularly marked at the part corresponding to the chain-like directions of the tube, if they touch the skin. We shall see further on, upon the subject of consecutive paralysis, that these pains are entirely due to the India rubber tube. There are, then, sufficient reasons for rejecting this part of the appareil, adding that the tube is often useless. Several times I have been quite satisfied, after bandaging the member, to make a few more turns with the same bandage and fasten with a knot. This means has already been employed by Dr. Labbé. It would be better to use another ligature, in the form of a band, in place of the tube. Langenbeck has proposed the use of a simple elastic band, to be fastened with a pin; and Esmarch has himself acknowledged the inconvenience of the constrictor tube. We find, upon this subject, the following in the Progress Medicale of October 31, 1874:

"Mr. Bryant, surgeon of Guy's Hospital, had a case of a sequestrum in the tibia to be operated upon, and Esmarch was to assist. The surgeon of Keil found that the form and size (not so large, it is true, as the tube of Galante) of the tube which was shown to him were dangerous, and might, indeed, produce paralysis. He preferred to use a flat band, like the one first placed, and he believed its application

equally efficacious and less dangerous. He was able to put in practice at once this modification upon the patient of Mr. Bryant, using a second flat elastic band, only about thirty-nine inches long, and the ischæmia was perfect. We believe that this second band ought to take the place of the constricting India rubber tube. Divers means have been proposed to produce ischæmia, but they present less qualities than those of the appareil of Esmarch. We will describe some of them: Dr. Harrison Cripps, of St. Bartholomew's Hospital, used, instead of the band and tube, only the tube united at the two extremities to form a ring. This tube was wrapped around the member by means of a grooved reel with a double handle. The compression in this case is less even, and sometimes insufficient, e. g., in the popliteal space.

Tenderini (of Carrara) has tried, instead of the band and tube, a cord of woolen or cotton wound tightly around the member, and he was thus able to make three amputations without hemorrhage.

Rouge (of Lausanne) has proposed the use of a simple, ordinary band.

But it is, we believe, useless to show the difference between these different appareils and that of Esmarch.

In certain cases, if we wish simply to prevent the entrance of the arterial blood, we may employ an india-rubber tube, or, rather, a band with which we can make a circular constriction.

We can, in the same way, apply this band at the root of the fingers or toes, or the penis, when we operate upon those members. The process is very simple and useful, and is practiced by many surgeons.

Effects of the Appareil of Esmarch.—These effects should be divided into two classes, viz., *general* effects and *local* effects. The *general effects* are due to the driving back of the blood by auto-transfusion; they are but slightly marked, and, moreover, but little studied. Meanwhile, we have searched to see

any modifications which might happen unexpectedly in the circulation, the respiration, or general temperature of the body. The principal researches in this direction are due to Dr. Chanvel, and are stated in the thesis of Dr. Soulié; Doctors Laborde and Augier have also made some experiments.

Troubles of the Circulation.—It was at first thought that the driving back of the blood would bring a relative augmentation of the mass, and produce signs of plethora. There were none.

Esmarch, in a case of ischæmia of both legs at the same time, observed no trouble in the circulation. Rouge, also, amputated, at the same time, the two legs of a young boy, without remarking any circulatory trouble. Nevertheless, Dr. Chanvel has shown, by examination of the pulse, and by the sphygmographic traces, in his experiments that there is augmentation of arterial tension, which results were confirmed by the researches of Dr. Augier.

The increase in tension will depend upon the nearness of the compression to the root of the member. Upon this subject Dr. Augier has pertinently remarked that these experimental data are often applicable to cases of anemia, persons threatened with syncope, during chloroformization. This afflux of blood to the general circulation, it appears, ought to account partly for this accident.

Troubles of Respiration.—Dr. Soulié states nothing in particular upon this subject; he observed several times, he said, a state of great pain, malaise tending to syncope, with cold perspiration and pallor, and a desire to have the apparatus taken off.

The *temperature* in the axillary space observed by Doctors Chanvel and Soulié, before, during, and after the application of the appareil, showed only insignificant oscillations.

Local Effects.—The local effects should be distinguished by *immediate* and *consecutive*, according as we observe them, while the appareil is in place or after its removal. The immediate

local effects are: the pain caused by the appareil, the diminution of the size of the member, the ischæmia, the sensations felt by the patient, the modifications in the sensibility, the mobility, and the temperature.

It has been recommended not to use the appareil of Esmarch, except with administration of chloroform, so the patient may escape the acute pain caused by compression. If we consult the different observations which have been made in this respect, we shall see great differences between them; thus, while some patients have felt no pain, others have complained, more or less, bitterly. I have made some experiments where the result of applying the band moderately, but with sufficient tightness, was little or no pain; but it is not so with the tube constrictor, which produces a very lively pain, and in experimenting upon myself I found this constriction very painful.

Moreover, we have said that this tube ought to be replaced by a second India-rubber band, of the kind used by Grandesso Silvestri (of Vicence), and of which he gives the desciption in his treatise of 1871.

In summing up, as in some cases the application of the apparel may be painful, it is better to produce anesthism before. After removing the first band we see a cadaveric pallor of the limb, and also a slight diminution in size. Ischæmia is complete, and this discoloration extends itself to all the tissues from the skin to the bones. The arteries and veins are empty. Dr. Angier, interne at hospitals, has dissected the amputated members, after use of the elastic band, and found the veins absolutely empty. He says this is not true of the points where uniform compression was not possible; for instance, in the deepest veins of the bottom of the foot, behind the ankles, and in the popliteal space, where he has found some drops of blood. In the work of the same author we find an observation (obs. V.) where the muscles showed an interstitial infiltration of blood. This hap-

pened in an amputation of the thigh at the inferior third, made by Dr. Périer. Before taking off the constricting tube, they perceived that the muscles at the bottom of the cone formed by the stump were infiltrated with spots of blackish blood about the size of a ten cent piece or an English sixpence, which they were unable to remove, either by washing or by rubbing.

"There is the action," said Dr. Buret, the author of the observation, "of a true *interstitial sanguineous infiltration of the muscles.*" The demonstration of this infiltration is important, because it shows that we ought not to apply this *expulsive band* either too rapidly or with too much force, that the blood may have time to flow towards the root of the limb, and also to avoid rupturing the vessels, particularly the small venous branches.

Pertinent to this matter of discoloration of the tissues, it is a point to which I desire to call attention, and which struck me in an operation of sub-periosteal resection of the elbow, which I performed at Pitié Hospital. The patient was a young girl, who had a chronic purulent arthritis of the elbow, with necrosis of the olecranon. The bone was discolored, bloodless, of a dead white, and slightly grayish, so that it was difficult to determine the exact limit between the diseased and the healthy bony tissue, and we might have believed the necrosis extended farther than it really did extend. I observed this in detaching the periosteum, and the examination of the surface and consistence of the bone completed the diagnosis of the lesion.

It is useful to know beforehand the existence of this *particular tinge of the bone*, and since the important sign of the vascularisation of the bony tissue is wanting, it is necessary to make a more careful examination of the other anatomical modifications presented by the diseased bone.

I come now to the *sensations* felt by the patient. He feels formication in the member, and also a numbness which is

sometimes painful. In an experiment to which Mr. Cartaz, interne of hospitals, submitted himself, he felt acute pains at the finger joints. The limb becomes heavy and burdensome, the patients find it difficult to move it, and in several of the experiments of Dr. Chauvel, movement was impossible. The *temperature* of the limb falls, but we did not mark the variations in man. Doctors Laborde and Morel d'Arleux communicated to the Biological Society the results of experiments on dogs, and from which the temperature fell from 7° to 9° Fahrenheit, but rising 3 to 3.5° above the normal state after the bandage was removed. Dr. Krishaber, relying upon his own experiments, has made some reservations upon the results obtained by Dr. Laborde. He has well established the fall in temperature, but not a consecutive elevation.

Anæsthesia.—Since the appearance of Esmarch's apparatus, it has been asked if ischæmia did not bring with it anæsthesia sufficient to permit of certain operations without chloroform.

It is admitted that ischæmia brings by itself a certain insensibility. The experiments upon animals show that when we bleed a member, the cutaneous sensibility disappears, but returns when we inject blood into the vessels. Meanwhile, numbers of observations prove that sensibility remains after the application of the appareil, and, on the other hand, some facts have been published, in which the patient, not under chloroform, has not felt pain. (Communications made to the Surgical Society, by Dr. Le Fort.)

In the face of these diversities, and of the interest shown to resolve the question, bold experiments were made, from which it resulted that the anæsthesia was due particularly to the compression of the nervous trunks. Among these experiments, part were made by Drs. Laborde, Morse d'Arleux, and Krishaber, on animals, and part were made upon man by Dr. Chanvel and other experimenters. The results obtained are nearly like those obtained by Drs. Vulpian and

Bastien, twenty years since, in their researches upon the effects of compression of nerves. The positive observations of Drs. Vulpian and Bastien, may serve as guides in our new researches. Also, let us believe, we ought to remember the conclusions to which these experimenters had arrived. The experiments were made upon themselves, repeated by others, and the results were constant.

From these experiments, the effects of the compression of nerves divide themselves into two periods. The first period comprises four states, viz.:

1. The state of formication, which lasts from two to ten minutes, and more.

2. An intermediate state, when formication has ceased, and all seems to return to the *normal state*, varying from a few seconds to a quarter of an hour.

3. A state of hyperæsthesia, sensibility to the touch, or to tickling, and increase of temperature, of no precise duration.

4. A state of *anæsthesia* and *muscular paralysis*. For the experiments, compression was suspended at the moment when muscular paralysis was complete. This state lasts from a few minutes to a quarter of an hour.

The second period commences after the cessation of compression, and is equally divided into four states, the order of the phenomena, however, being reversed. After the state of paralysis of sensibility and movement, lasting from a few seconds to one or two minutes, or more, comes the return of hyperæsthesia; then the intermediary normal state, and finally a state marked by a rapid centrifugal invasion of a sensation of cold, and of great heaviness or weight in the members. At this moment we notice malaise, tendency to fainting, formication, and finally a return to the normal state.

Drs. Vulpian and Bastien noticed a very important fact, viz.: that at whichever of the states of the first period we

take off the compression, a corresponding state will commence the second period. Thus, if compression ceases during the state of hyperæsthesia, the second period will commence with the same, and there will have been no anæsthesia.

Dr. Chanvel has made upon himself and others, equally interesting experiments, and which were the subject of a report made by Dr. Lannelonger to the Surgical Society.[1] Dr. Chanvel has shown that anæsthesia never takes place immediately, but is developed only after ten, fifteen, or twenty minutes. Insensibility appears sooner in the superior than in the inferior member; and the degree of constriction by the band, and especially by the constricting tube, has much influence upon its slow or rapid development, and upon the degree of anæsthesia.

Insensibility appears at first in the parts farthest from the trunk, and only reaches the superior regions progressively; and it is also in the extremities that it is most intense.

Finally, for Dr. Chanvel, there is evident anæsthesia, but it is nearly always incomplete.

It is interesting to compare the results of Dr. Chanvel's experiments, with those of Drs. Vulpian and Bastien, because we see that these last arrived at sound conclusions.

I have myself made some experiments, in which I ascertained there was a deadening of the sensibility, which was the more marked as we approached the extremity of the member. I have observed, also, a period of hyperæsthesia; and in one case the sensibility as to temperature was nul, the patient not feeling the contact of a cold body. As to the sensibility in the deep parts, in pressing in different ways the muscular masses, the patient complained of nearly the same sensations as in the parts not constricted. In employing the appareil of Esmarch, in operations of growing-in nails, though the cuta-

[1] *Union Medicale*, November 17, 1874.

neous sensibility was deadened, the patient complained of very sharp pains during the operation. To resume, the appareil of Esmarch, such as we ought to employ to produce ischemia during an operation, still does not determine sufficient anæsthesia to prevent the patient feeling pain during the operation.

If we make very strong compression, particularly with the constricting tube, we shall be able to produce anæsthesia by compression of the nervous trunks, but it is dangerous, and may, as we shall see further on, bring with it grave hæmorrhages, and be followed by paralysis. Professor Le Fort, under these considerations, and who had called attention to the possibility of anæsthesia being produced by the appareil of Esmarch, has declared himself no longer a partisan of this method of producing insensibility.

The *consecutive local effects* are those we observe on taking off the appareil.

We have already seen what are the phenomena observed as to sensibility, after cessation of compression of the nerves.

In the observations and experiments which have been made with this appareil, the sensations of numbness and formicans only, have been described. Dr. Soulié said that the formicans are sometimes intolerable, and aggravated by the least contact.

The *mobility* is not generally affected; the member, after a feeling of weakness for some instants, soon recovers its normal movements. Meanwhile several cases of consecutive muscular paralysis have been noticed, but we can say that this grave complication is due to the violent constriction exercised, particularly by the tube. Esmarch has never seen this, but attributes it to the same cause.

The known cases of muscular paralysis are very few, and were all in the superior members, where the nerves are more easily compressed.

Dr. Angier reports that twice, following operations for

pseudarthrosis of the humerus, Langenbeck had observed paralysis of the median nerve, which, however, disappeared in about a fortnight, and which he attributed to the constriction of the tube.

I am indebted to Dr. Cartarz for an interesting memoir upon paralysis of the median and cubital nerves, and from which I have made the following extract:

"*Chronic Osteitis of the Tibia and the Humerus evidently; Application of the Appareil of Esmarch; Consecutive Paralysis of the Median and Cubital Nerves.*—L., 18 years; store clerk, had, in his youth, obstruction and suppuration of the glands of the neck. About a year before entering the hospital there had been a progressive development of an osteitis of the tibia. At the end of two months, a series of osseous fistulas were established. Shortly after a doctor incised an abscess on the right arm, which followed a contusion caused four months before by a kick from a horse. The bone was found denuded, and there also was an osseous fistula. At the time of entering the hospital there were seven or eight fistulous tracts leading to a necrosis of the tibia.

November 8. These fistulas proceeded, evidently, from the fibula, and, on the second of January, there remained a single sore, of the size of a five franc (or a dollar) piece. Osseous fistula persisted at the junction of the superior and middle third of the right humerus, conducting to a cavity where the probe showed there were fragments of necrosed bone.

January 24, 1874. After chloroformisation application of the band and tube was made at the root of the shoulder, according to the rule prescribed by Esmarch, and moderately tight. An incision, three and one-eighth inch long, was made along the external border of the arm, and two and three-fourths inches from the shoulder, from which were taken three pieces of sequestrum, and some fungus growths. During the operation, lasting about twenty-five minutes, not a drop of blood flowed. The wound was tamped with dry

lint, and bound with a roller bandage. The state of the patient was perfect at the evening visit, but a slight, painful swelling was seen at the point of the shoulder. Around the sore a redness, like scarlatina, disappearing on pressure, but returning quickly. The wound offered nothing worthy of notice; the redness ceased abruptly at the level of the place where the tube was applied.

Incomplete anæsthesia of the hand, fore-arm, and superior portion of the arm.

Loss of mobility, fingers flexed with difficulty. Since awak ening, the patient has felt formicans in the whole arm, but without pain. Incomplete paralysis of the flexors; the hand cannot completely close.

There is a very noticeable diminution of the sensibility; he feels the pricking of a pin, but gentle touch is not felt.

Temperature normal. In the fore-arm, anæsthesia shows itself, particularly in the vicinity of the cubital nerve. Sensibility seemed more blunted at the palmer surface of the hand than at the dorsal surface. The thumb and forefinger have the least sensibility.

January 25. Cutaneous rednesss, much more marked, still disappearing, however, on pressure. Edematous swelling more pronounced at the shoulder. Pain in the axillary region, but no induration on the line of the vein. Outside the redness, the skin is white, and they seem to be in presence of a veritable *plegmasia alba dolens.*

January 26. Same swelling and redness; anæsthesia less pronounced on palmer surface of fore-arm and hand.

January 27. Swelling at shoulder diminished; redness a little less; sensibility returned; the flexors again act, though the thumb flexes less readily than the other fingers. Sensibility to the gentle touch of the pin not always seen.

January 28. Redness and swelling have disappeared; sensibility of palmar surface of fore-arm and hand nearly normal.

January 29. An abundant hæmorrhage from the upper portion of the wound; arrested by tamping with lint saturated with per chloride of iron.

January 31. Paralysis of median and cubital disappeared.

February 3. On removing the tampon, no hæmorrhage. Towards the 1st of March the wound was nearly closed, and the patient sent to Vincennes.

This memoir suggests several remarks, as the application of the appareil of Esmarch has been followed by an unusually pronounced scarlet cutaneous redness; by an abundant secnodary hæmorrhage; and finally, by an incomplete and temporary paralysis of the median and cubital nerves. We shall return to the two first com plications further on.

This case agrees with the case of Langenbeck in demonstrating the possibility of producing paralysis by this appareil.

We must be careful, then, not to make too powerful constriction, and reject the constricting tube, which has been the cause of the paralysis.

I will add, in terminating this sketch, that Dr. Gayet, of Lyons, has made some experiments on dogs, for the study of mobility, and produced temporary paralysis.

Perhaps these paralyses might show themselves if the appareil is left on too long. Dr. Gayet appears to have observed in his experiments, that the troubles in the mobility increased with the duration of the application. We must wait the results of ulterior observation.

Let us come now to the phenomena observed in the *vascular system.*

Immediately after the removal of the constrictor, a rapid *congestion* is produced of all the parts that have been submitted to the pressure; the skin becomes reddened, the tinge being more or less dark. The intensity and duration of the congestion is in accordance with the force and duration of the compression, while it is more intense and persistent at

the points compressed; and is due to vaso-motor paralysis. And it is not only in the skin that we observe this congestion, but in the body of the tissues and on the cut surface of the bone.

This congestion is usually of short duration.

In one experiment made with Dr. Cartaz, the appareil, applied so as to produce complete ischæmia, remained in place six minutes, and congestion showed itself immediately upon all the points under ischæmia, but which commenced to diminish in about two minutes, and entirely disappeared in four minutes.

Sometimes the *redness persists* longer.

This fact is noticed in the memoir of Dr. Delannoy; and Dr. Angier also reports a case, which he attributed to a vaso-motor paralysis.

It acted in the same way, very clearly, in a case of necrosis of the tibia. The day after the operation, they discovered at the knee (the band had been applied at the inferior third of the thigh) a diffused redness, but without any phenomena of reaction, either local or general.

This redness was limited to the joint, and stopped at about an inch above the superior edge of the wound. Slight concurrent hemorrhage. Both disappeared at the end of three days.

In the observation to which we have before referred, due, as also the preceding one, to Dr. Cartaz, the redness also persisted three days, and was seen where the tube had been placed.

I shall not urge the point further, but wished to bring the fact to notice.

The *hemorrahage* which is seen after the removal of the appareil, presents a subject of much higher interest to the surgeon.

Let us occupy ourselves, first, with that which is produced immediately.

When this appareil was first used, but little importance was attached to this hæmorrhage, and in reading the literature, one is struck with the great number of compilations upon this subject. The operation, say they, is made without loss of a drop of blood; but we see at the time of dressing the wound, that there has been a more or less abundant hæmorrhage, sometimes very abundant. We will add that, in a good number of cases, hæmorrhage is reproduced in the first twenty-four hours.

That does not prevent the author from often deducing conclusions, that the process of Esmarch, preserved to the patient, all his blood. It is a great exaggeration, as was said by Dr. Verneuil to the Surgical Society; and this is the opinion to-day of the greater part of the surgeons of England and of France.

What is true, is, that during the operation there is no escape of blood, and this makes Esmarch's appareil valuable in many cases. But as soon as the constricting band is removed, the blood flows rapidly into the dilated vessels; the skin and the other tissues become congested, and at the surface of the wound, the blood wells up in abundance, as it has been expressed, as into a sponge.

Not only is there hæmorrhage on the cloth, but the smallest arteries, which have escaped the pressure, throw out jets of blood, and numbers of little veins also give out black blood.

Happily this hæmorrhage is of short duration; and diminishes soon of itself, at the same time as the congestion diminishes, the two phenomena being due to the same cause. The hemorrhage is to be the more feared, as the constriction is made too strong, or too much prolonged.

This hæmorrhage warns the surgeon to ligate carefully all the arteries visible, before removing the appareil, and also those that bleed at the time of removal, for fear of secondary hæmorrhage, which nevertheless often comes unexpectedly.

It is useless to produce further testimony demonstrating the fact, these hæmorrhages being sometimes very abundant, and of frequent occurrence, and, in some cases, the patient has lost as much if not more blood, than under digital compression of the artery. I have had occasion to observe this in performing Lisfranc's amputation.

Is it true that the amount of blood lost with Esmarch's process is less than by the ordinary method?

The patient loses blood, but not so much as under the old plan, if we ligate carefully all the bleeding vessels, before removal, and do not make too violent nor too long compression.

It is not the immediate loss of blood under Esmarch's plan of which I complain, although it prolongs the operation from the great number of arteries and veins to be taken up; but I do complain of the danger of secondary hæmorrhages which it leaves.

These are frequent, sometimes abundant, oblige us to undo the first dressings, and irritate the wound by the search for the bleeding vessels, and by the hemostatis employed. I do not fear to say that, in the process of Esmarch, there is greater liability to secondary hœmorrhage than under ordinary digital compression. I have observed several cases.

Dr. Verneuil has noticed these secondary hæmorrhages, and their inconvenience when they applied the wadded dressings of Dr. A. Guérin. Several times they have been obliged to remove these dressings.

These considerations, viz., abundant and sometimes very great immediate hæmorrhage, the necessity of a great number of ligations, and of waiting much longer before dressing the wound, and in consequence, a longer time occupied in the operation, as also danger of secondary hæmorrhage, show that the process of Esmarch in ordinary amputations is not as serviceable as was expected, and that we ought often to prefer the ordinary method. Sometimes cold water sprinkled

upon the wound is sufficient to arrest hæmorrhage. In cases of sequestra, where the process of Esmarch is so useful, hæmorrhage is generally slight, and is arrested by a compress.

Some surgeons, and Esmarch himself, have in these cases dressed the wound before taking off the constrictor, Esmarch sometimes using starch and per chlor. iron for dressing. Nevertheless, hæmorrhages do often show themselves, as we have seen in the work of Dr. Delannoy.

As to *secondary hæmorrhages*, they have been but very little debated in the published works. We have cited some cases, but it is a point which demands fuller investigation.

I will close by bringing to notice some exceptional accidents which have been observed to follow the use of Esmarch's appareil, the interpretation of which will raise discussions, but I ought to describe them.

Several cases have been cited of *gangrene* of the lacerated parts of the wound, but the facts do not demonstrate that this complication attaches to the use of the apparel of Esmarch.

Doctors Delannoy and Augier believe that the apparel may produce secondary phlebitis and abscesses, and each one brings a case in support of their opinion. The case of Dr. Delannoy opens up too large a discussion for this paper, but Dr. Augier thinks that superficial veins may become inflamed, particularly if the appareil is applied over varicosed veins, and cites a case (Obs. XXII.) so interesting that we produce it here.

Man, varicose veins of leg. Extirpation of the little toe for caries. The patient was not anesthetized, and in spite of the powerful and painful constriction made, the pain resulting from the operation was acutely felt. Padded dressing, but they were obliged to remove it on account of the pain complained of by the patient. Phlebitis of the external saphenous vein, followed by an abcess at the point of

constriction. The phlebitis seemed also to originate there. The third day another abcess at the same level, but on the opposite side of the leg. It was sub-cutaneous and much extended. These accidents were followed by chills, and the state of the patient is still grave. I confine myself to this fact, in which the constricting cord has had at least a certain influence upon the seat of the phlebitis.

I have, in this review, studied the effects of Esmarch's process, by analyzing most of the works which have appeared in France upon the subject. I leave aside for the moment other questions which attach themselves to the use of this method of ischemia, such, for instance, as the indications, the contra-indications, its influence upon the progress of healing, etc., etc. I will add, however, in conclusion, that if this method does not appear to be of great service in ordinary amputations, it will be very useful in resections, operations for sequestra, in wounds of arteries, searches for foreign bodies, etc., etc. Its field of application is thus vast, and its importance such that we ought to become well acquainted both with its immediate and its remote effects—a study which we have been able only to sketch in the foregoing lines.

[Here follow the names of twelve distinguished surgeons in Germany and France whose published opinions the author has consulted in this memoir.—THE TRANSLATOR.]

CORRESPONDENCE.

NEW YORK, *July* 15, 1877.

Prof. J. H. Pooley, M.D., Editor Ohio Medical and Surgical Journal:

DEAR DOCTOR: In my last letter I gave expression to my admiration and my esteem for the eminent surgeons connected with the New York Women's Hospital. The object of my referring to-day again to the same institution, and the gentlemen connected with it, is twofold. First, I am enabled to lay before your readers some statistics corroboratory of my former statement, regarding the operations performed and the small death rate following in the New York Women's Hospital, from May 1, 1872, to December 22, 1874, being the days upon which Dr. Marion Sims entered and left the hospital:

	Number of patients admitted.	Number of operations.	Deaths.
By Dr. Sims	237	215	14
By Dr. Thomas	207	93	11
By Dr. Peaslee	132	88	6
By Dr. Emmet	143	116	1
Total	919	512	32

Out of 512 operations there were 32 deaths; or about six per cent. I am convinced that as soon as the antiseptic or Lister's method shall be introduced, the percentage will be still more favorable. The cold water treatment of fevers following operations has only partially been tried in the Women's Hospital. With these two additional methods, added to the great skill displayed by the attending surgeons, it is safe to predict that the mortality among properly and carefully selected cases will probably yet decrease to a considerably lower number.

The antiseptic treatment of wounds has been made obligatory in the German and Austrian army hospitals, and some surgeons in Austria, who have compared the different methods of treating wounds, and have expressed their preference for Lister's method, have been decorated with medals by the Emperor of Austria—so I read in the Wiener Medisinische Wochenschrift. I return to this question—a momentous one, without doubt, is that of knowing how to save human lives—in order to induce all those whom I can convince of the superiority of Lister's treatment to try it, if they have not already done so, and they will surely be more successful surgeons than without it.

Secondly, I referred to the Women's Hospital in the State of New York for the purpose of expressing my regret at the attacks made on each other by the gentlemen who were the founders of the magnificent and so eminently conducted institution. Thus the greatest of men are but human, "*errare humanum est*,"—to err is human, to forgive is divine. The profession throughout these United States will be grieved at the harsh language used first by Dr. M. Sims against Peaslee, Emmet, and Thomas, charging them with ungentlemanly conduct and double dealing, causing, as Dr. Sims believes, that his resignation as one of the surgeons of the Women's Hospital, which he tendered in a moment of excitement, was at once unanimously accepted by the board of governors.

The cause of him (Sims) tendering his resignation was that he disagreed with the other attending surgeons of the Women's Hospital, in the State of New York, regarding the propriety of not admitting patients affected with carcinoma into the wards of the hospital, and, secondly, that no more than fifteen invited guests be present at any one time as witnesses of the operations at the hospital. Dr. Sims opposed both rules, and threatened to resign in case these two resolutions should be carried into effect. The board of

governors, it seems to me, very properly excluded cancer cases from the wards of the Women's Hospital, and showed good sense on their part in not allowing the operating room to be crowded unnecessarily, as it is impossible for more than fifteen gentlemen to look into one vagina at one and the same time. Dr. Sims differed from all connected with that institution, hence his resignation, and as he would not serve unless these two resolutions were rescinded, the governors, I have no doubt, in consideration of that gentleman's eminent services rendered, reluctantly accepted Dr. Sims's resignation.

But it seems that Dr. S. regretted that he tendered his resignation, and severed his connection from an institution of which he was the founder, and in which his methods of operation were performed, to the benefit of hundreds of suffering women. He laid his grievance before the profession, and accused his colleagues, as stated, of unfair dealings. It was but natural that Drs. E. R. Peaslee, T. A. Emmet, and T. G. Thomas could not let the matter rest, coming as it did from such high authority, and they in turn laid their version of this disagreeable affair before the medical world.

Stating, as it seems to me dispassionately, how it came that Dr. Sims's resignation of the office of attending surgeon of the Women's Hospital in the State of New York was accepted, as far as I can judge I think Dr. Sims has erred in tendering his resignation from an institution which owed to him its existence, or rather its origin, and he has further erred in accusing the other gentlemen named of having in any way caused, either directly or indirectly, that Dr. S. should tender his resignation, or that it be accepted. Dr. Sims thought he would be coaxed to remain, and would continue to be, as he desired to be, the absolute dictator of the institution. The attack upon Peaslee, Emmet, and Thomas was entirely unprovoked, and they were, as gentlemen, compelled, and in duty bound, to reply, and to vindicate their

honor before the profession. This they have done. I have no doubt it will be the impartial verdict of the medical world who have read both pamphlets, that no matter how eminent the services of Dr. Sims as a gynecologist, and how proud we are to hear and see his illustrious name admired, both here and abroad, still every impartial observer of this disagreeable affair must find Dr, Sims *at fault*, while no blame can be attached to the action of either Drs. Peaslee, Emmet, or Thomas. Many of your readers have no doubt seen and read both pamphlets, but as there may be some who have not read it, I have referred to it in this place.

My letter from New York at this season of the year, to a medical journal, would be incomplete were I to omit a reference to the quarrel herein mentioned, since it has been the topic of conversation and regret among the New York physicians for the past month or two. In my opinion it is the duty of the medical profession, through its journals, to weigh the evidence furnished by the high and honorable contesting parties, and to pronounce judgment in accordance therewith. As a faithful correspondent I have here given expression to the feeling of those of my New York professional brethren whom I have interviewed on the subject.

Still another war with the pen has taken place between two eminent eye doctors in New York, through the medium of the New York Medical Record. Dr. Loring and Dr. Knapp quarrel about who was the real inventor of the ophthalmoscope with the multiple discs. Both claim the honor of having made certain improvements, and both are right. Each of the gentlemen admit that they have improved upon each other's improvements, upon what Wecker, of Paris, and others had improved before; and so the improvements are still going on, and the world moves on. Loring's ophthalmoscope is as good as Knapp's, and Knapp's as good as Loring's. Dr. Knapp has gone to Europe for a couple of months, and left his large and lucrative practice in charge of your es-

teemed brother, T. R. Pooley, M.D., who, I am glad to learn, has been recently appointed Clinical Professor of Ophthalmology in Starling Medical College. DR. RUDOLF TAUSZKY.

COLUMBUS, *July* 29.

DR. J. H. POOLEY—*Dear Sir:* My cellar is usually dry, and kept clean, but some time ago the water meter burst, and before the damage was detected and repaired, enough water had escaped to render much of the cellar floor decidedly moist, although no water was visible. In a short time the air of the cellar became offensive, and a sort of musty smell became observable in the rooms above it. Thereupon I had the cellar thoroughly cleaned out, and sprinkled chloride of lime freely about on its floor.

The point I wish to note is this: The windows of the cellar, six in number, have been wide open for weeks. The windows of the ground floor, five in number, and large, and the front door, are kept open most of the time—in fact from 7 A.M. to 11 P.M.—and to-day, by some inattention on the part of "Old Probabilities," there has been a free current of fresh air through the rooms. Nevertheless, within four hours after the chloride of lime had been sprinkled in the cellar, chlorine was unmistakably present in the air of the rooms above.

It seems to me that this observation is an additional evidence to those already collected, of the danger to which the occupants of houses are exposed from decaying matters in cellars. For if chlorine (specific gravity 2.47) can so easily make its way through floors, paper linings, and carpets, why may not also the gaseous and sometimes poisonous products of decay? Whether wrongly, or not, I attribute some of the discomfort I have lately "enjoyed" to the damp cellar.

On sprinkling the chloride of lime, I expected that sooner or later I should know, by the air in the rooms above, that chlorine had been liberated in the cellar below; but I con-

fess that I was amazed at the rapidity with which it made its presence manifest, under the conditions noted.

While writing this, I call to mind several cases of typhoid fever which were (and probably with truth) attributed to the bursting of house sewers, undiscovered for some time through being covered with the winter's coal.

But is not cellar air, under ordinary conditions, foul air? And ought not greater care be taken in keeping cellars perfectly free from decaying matters?

Very truly, S. A. N.

VIENNA, AUSTRIA, *July*, 1877.

DEAR DOCTOR: Continuing our review of the medical celebrities here and turning to the department of ophthalmology, we find that science fostered by such men as Arlt and Stellwag v. Carion. Professor Arlt gives combined lectures and clinics two hours daily on five days of the week, and here also, as all other professors, treats the poor gratis. Being now sixty-six years of age, he has but four years more before he will be put on the pension list. Notwithstanding his advanced age he has but a slight sprinkling of gray in his dark hair, and in form and features very much resembles the Professor of Chemistry at Starling College, only that his face is garnished by an immense pair of iron-bound spectacles. Arlt lectures in a very low voice, and has a rather loose and disconnected style. About his elegance and skill in operating, it is needless for me to say anything in its praise. He has been connected with the University for over thirty years.

Prof. Stellwag v. Carion, better known simply as Stellwag, lectures at the same time as Arlt. He is more corpulent and rather more comfortable looking than his colleague, and considerably younger, being about forty-five. His face is ornamented by a black mustache and a good sized Lincoln wart. He speaks rather loudly, and with a tinge of the Viennese dialect. He has been connected with the University

for about four years—since the shutting up of the Josephinum, the former military medical academy.

Of dermatologists we have here the renowned Prof. Hebra, the founder of a scientific dermatology. Hebra, born in 1816, and, consequently, now sixty-one, graduated from this school in 1841. He became assistant in the Krankenhaus, and in 1844 published his remarkable work on scabies, which at once attracted attention toward him. In 1848 he was elected professor extraordinary, and in 1869 he was made "ordentlicher" professor. Hebra, with his white hair and sleek paunch, is a jolly looking fellow, and indulges freely in jokes and wit during his clinics and lectures, much to the delight of his students. He lectures from seven to nine A.M. from Monday to Friday included.

Besides the men already mentioned, we have such men as Bamberger on internal medicine; Heschl and Stricker in pathology; Zeissl and Sigmund in syphillis; Dittel, Lauger, and others; but as the writer tires of writing, so your readers will tire of reading, and therefore to a change.

That even the greatest are liable to err, was recently illustrated by no less a man than Billroth, and, as it may tend to console some unfortunate brother—the details. A few weeks ago a woman was sent to Billroth, on whom an ovarian tumor had been diagnosed. The case was deemed one suitable for operation, and the professor proceeded to operate with his scrupulous care always used in such cases. He operates only early in the morning, in a hot room under the carbolic acid spray, with sponges and instruments that have been soaked in a three per cent. solution of carbolic acid, and with the help of assistants with perfectly clean clothes, and they must not have been to see any sick before the operation. In this case all these precautions were observed, but when the first incision was made into the abdomen a fountain of clear fluid broke forth and the case turned out to be one of simple ascites without the least trouble with the ovaries.

On the 22nd of June, Prof. Spaeth made the Cæsarean sec-

tion on a woman with contracted pelvis. The child was at full term and after its extraction the uterus was amputated at the cervix, with the galvano-caustic loop, it being impossible to make that organ contract and stop bleeding. Mother and child are both alive and doing well at this date.

The lectures and clinics are now all closed but some of the private courses, of which there are a great number during the year, still continue as they will during the whole of vacation. These courses, which usually last from four to six weeks, are given by the assistants, "privat-dozenten" and as they are usually limited to ten or twenty students, they are very valuable aids. The foreigners here confine themselves almost exclusively to these courses. During the present year the medical school was attended by nine hundred and six students, the largest number at any one school in Europe, and among them are representatives from all countries where doctors exist. The Americans have representatives from nearly every State in the Union. A. M. BLEILE.

REPORTS OF SOCIETIES.

MONTGOMERY COUNTY MEDICAL SOCIETY.

This Society held its monthly meeting in the parlor of the Beckel House, Dayton, Ohio, on Thursday, June 7, at half-past seven, P.M., with a large attendance. The Society was called to order by the President, Dr. J. C. Reeve.

Dr. J. D. Daugherty, the essayist for the evening, presented the Society with a very interesting paper on the therapeutic use of quinia, which was thoroughly discussed.

Dr. W. J. Conklin presented an encephaloid tumor, with a history of the case.

Dr. J. C. Reeve gave the Society the history of two very interesting cases of lithotomy that he had under treatment, and presented the calculi that had been removed, for inspection.

Resolution by Dr. J. D. Daugherty: That the President and Secretary be authorized to make out credentials for any of the members who wish to represent the Society, as delegates to the Ohio State Medical Society.

On motion of Dr. Conklin, it was

Resolved, That a committee of two be appointed by the President to investigate the Morrison Bill to take off the tariff on quinia, and to report at the next meeting of the Society.

The President named Drs. Conklin and Jewett.

Dr. J. B. Wilson, of this city, and Dr. J. F. De Bra, of Miamisburg, were proposed by Dr. Treon, for membership.

Dr. Scheibenzuber was appointed essayist, with Dr. Hoff as alternate, for the next meeting.

Dr. Reeve presented two specimens of urinary calculus, with the following remarks:

"Gentlemen: You will remember that at our meeting in February, Dr. Weaver presented a very interesting specimen of urinary calculus, removed by lithotomy, at the Soldiers' Home, the nucleus being a stalk of grass or straw. I then called your attention to the extreme rarity of this disease in this section of the country, and to the desirability of placing upon record all cases, that in the future we might be able to definitely compare this with other regions of our country. Up to that time, I had met with but one case of vesical calculus in twenty-three years' practice here, having, about three years ago, removed one, the size of a bean, from the bladder of a boy five years old. One other case I saw, in the person of an adult, a transient resident, and he went on to Cincinnati; he probably did not acquire the disease here. One case heard of was operated on by the late Dr. Crook; another was on the person of a boy, twelve years of age, who died at the Children's Home six years ago, just before I took charge of the institution; and, since then, I have heard of another, in the northern part of the county, an adult male, which went out of the State for operation. These are all the cases seen or heard of, and I think you will agree with me that this indicates a very rare occurrence of calculous disease in this section, since it presents not only all cases seen, but all heard of, by one pretty well acquainted as to the medical matters of the county and section for a period of twenty-three years.

"Since that meeting, at which Dr. Weaver presented the specimen, two other cases have fallen under my care, have been operated on, and the specimens are before you.

"The first is a small, very hard and very irregular calculus, weighing about twelve grains, which I removed, by incision, from the urethra of a boy about fourteen years of age. He had, occasionally, symptoms of stone in the bladder all his life, but within twenty-four hours of the time I saw him, he had suffered very severely, especially upon attempting to make water, and it was only with great difficulty that he relieved himself. Putting him under an anæsthetic, an attempt was made to pass a

catheter, but it met with an obstruction in the perineal region. Pinching up the tissues deeply the stone could be plainly felt, and all fair efforts to push it back into the bladder, or to move it it any direction, having failed, it was cut down upon and removed. The incision began at the posterior junction of the scrotum with the perinæum, extending thence downwards. Extraction was somewhat difficult, from the impossibility of making a clean incision over so irregular a body, but there was no hæmorrhage of consequence. A soft catheter was kept in the bladder a few days, and recovery followed.

"The second specimen is a calculus measuring one inch and three-eighths in length, by three-fourths of an inch in diameter, and weighing ninety-five grains. The patient was a boy five years old, brought to my office, with a very clear and distinct history of stone in the bladder, extending over two years past Sounding verified the existence of calculus, and I performed the operation of median lithotomy, assisted by Drs. Conklin, Neal, Jewett, and E. B. Davis. The patient had a very small penis and urethra, so much so that a No. 6 staff would not enter, and I was obliged to send to Cincinnati for one, and with it received word that it had to be made on purpose, as so small an instrument was very rarely required. The patient being placed under chloroform, I incised the urethra from behind, forwards and upwards, passing the point of the knife into it at the anterior border of the prostate, then introduced Little's director, and upon this gained access to the bladder with my finger. The stone was high up, was caught with difficulty, and I had still greater difficulty in extracting it. I used a strong polypus forceps, which gave a firm hold, but which made some risk of crushing it, which I wished to avoid. The first seizure was transversely, too, so that some delay was occasioned, both to catch it right, and then, from its size, to extract it. In this part of the operation I was materially assisted by pressure above the pubes, and afterwards by a finger in the rectum. The calculus, as you see, bears the marks of abrasion by the forceps. The patient did extremely well after the operation; he recovered without a single bad symptom; it was not, however, until the thirteenth day that he passed his water entirely by the urethra.

"It would, of course, be but foolish presumption, for any one having so limited an experience with lithotomy, to say anything here as to the relative merits of the median and lateral operations. While the latter has the weight of authority, as well as the greater number of authorities, on its side, the other has a few talented and warm advocates, who have pressed its claims upon the attention of the profession. Without expressing any opinion as to which is the better operation, I may be permitted to call attention to one point: the median operation held to be is

only admissible in cases of small-sized stones, yet here is a case with a stone of very considerable size, and with a result which was all that could e desired. I confess that, had I not been mistaken as to the size of the stone, I should, in this case, have performed lateral lithotomy, but I got out of a sick bed to make the first sounding, and did not get as accurate information as to the size of the stone as was desirable or perhaps necessary."

D.r W. J. Conklin reported the following case of intra-thoracic tumor: The variety of intra-thoracic tumors and the difficulties of diagnosis, invest each case with a special interest, aside from any intrinsic value which it may possess. As a contribution to the statistics of intra-thoracic growths, I report to the society the following case of encephaloid disease, developed in the anterior mediastinum, occurring in the practice of my friend Dr. DeBra, of Miamisburg.

Unfortunately, the clinical history of the case is very imperfect, and I shall, therefore, not attempt to give the development of the symptoms in chronological order.

J. P. G., æt 26, married, a carpenter by occupation, was well developed, and, excepting periodical attacks of asthma to which he had been liable from youth, had always enjoyed excellent health, until within less than a year previous to his death.

On July 4th, 1876, after short but severe exertion, he was seized with a severe pain in the anterior part of his chest. From this period he was subject to almost continuous pain in this region, which, at times, reached great severity. About the beginning of the present year he was taken with a severe cough, attended with profuse expectoration, which persisted until death. Near the first of April, œdema of the left arm was noticed, which, gradually involving the trunk and limbs, chiefly of the left side, slowly increased until death.

During the last three months of the patient's life, dyspnœa much increased upon exertion, was the prominent symptom.

About ten days previous to his death, Dr. Reeve was called in consultation. From his notes I make the following quotation: "The position in which I found the patient (Mr. G.) was peculiar; he was lying on the left side, bent forward, the head resting on the left arm, extended upwards, and this position had been maintained for some days, and he said that he could not comfortably bear any other position. He was, however, gotten up into a chair for examination, but could not bend backwards of an upright position. I was struck at once with the extensive and complete dullness of front and left side of chest, but all of the left side was very œdematous, even down to the crest of the ileum, thus interfering with auscultation and percussion. The apex beat of the heart I could not de-

fine; indeed, its action was so feeble that his pulse was barely perceptible. I could not distinguish the sounds of the heart. The exhaustion of the patient prevented any more extended examination.

"The autopsy was made twenty-seven hours after death; present, Doctors DeBra, Thuler, Buchwalter, and Manning, of Miamisburg, and Doctors T. D. Davis, Iddings, and myself, of Dayton.

"On opening the chest, the whole of the anterior portion was seen to be occupied by an adventitious growth. The pleural cavity on each side contained about a pint of fluid. There were no evidences of recent inflammatory action about the organs; a few old pleuritic adhesions were found at the apices. On removing the lungs from the cavity, the tumor seemed to be an outgrowth of the superior lobes, but careful dissection enabled us to separate the two structures. The tumor was adherent to, but not a part of, the lung tissue. The latter was perfectly healthy and capable of being fully inflated, excepting a very small portion at the point of attachment. The heart, which had been pushed somewhat out of position, was found intimately attached to the inferior portion of the mass. The aorta and large vessels were completely imbedded, and could not be separated from the cancerous growth without tearing. It required considerable patience and careful manipulation to separate the heart. The heart was then found to be normal in size and healthy. The pericardium was, however, firmly adherent to the surface of the heart, thus obliterating all traces of the pericardial sac. The growth, when separated from the viscera, weighed four and a half (4½) pounds, and presented, on physical and microscopical examination, all of the characteristics of encephaloid cancer."

PROCEEDINGS OF THE COLUMBUS ACADEMY OF MEDICINE. REPORTED BY GEORGE S. STEIN, M.D., SECRETARY.

STATED MEETING, *May* 25, 1877.

Dr. Neil, Vice-President, in the Chair.

Medico-Legal Case.—Dr. Loving reported the following case:

A physician, a friend of his, had been indicted for selling whisky, it being claimed that the whisky produced delirium and death. The man died on the third day. The patient was under the care of a physician, who gave him thirty-grain doses of hydrate of chloral every two or three hours, until he had taken, in all, two hundred and ten grains. He took two hundred and ten grains of chloral, and one grain of morphia, in twelve hours.

He said the patient was drunk, delirious, and had convulsions; he took these narcotics, and died after taking the last dose of chloral.

What killed him? What was the cause of death? Was it whisky, chloral, or a laceration of the septum between the ventricles of the heart? Which was found after death?

He was inclined to believe that the man's death was produced by the narcotics, and that a laceration of the septum occurred just before death, the heart being distended with blood, and in its violent movements the septum was lacerated.

Case of Uræmia.—Dr. Oleson reported a case of uræmia, following scarlet fever, for which he had prescribed hard-cider and muriated tincture of iron; but convulsions came on frequently. He then thought of Dr. Pooley's experience with the old-fashioned corn-sweat, in a case of uræmic convulsions, which he reported to the Academy a few weeks ago.

He tried it, and in a half-hour the patient got easy, and improved. He said that the rapidity with which his patient got to sweating, was interesting to him.

Dr. Loving said the corn-sweat is fully equal to any vapor-bath that could be devised. He then spoke of the novelty of the thing, and said that if we were in New York, and commenced putting hot corn into the bed of a patient, they would look upon us as outside barbarians.

Case of Prolapse of the Vagina and Uterus.—Dr. Kroesen then read the history of the following case:

Mrs. D., aged 39, married, has had six children; has never aborted; is about the medium height; has enjoyed good health generally, until within the last two years; during this period has complained of more or less "weakness" in the pelvic region; menses have been regular until within the last four months; complains of a dragging sensation in the pelvis, with but little pain.

Upon examination, it was found that the uterus was pretty well down in the vaginal canal, and the os pressing upon the floor of the pelvis, its body somewhat enlarged; no heat or tenderness of the vagina; no rectal or vesical irritation; no pain in the back or loins; but there was a certain amount of pelvic uneasiness on attempting to walk, with considerable leucorrhœa. He thought, at first, that it was a case of simple prolapsus uteri, and suspected the possibility of pregnancy; but none of the symptoms of that condition being present, and not wishing to catch up a hasty diagnosis, he left the patient with some directions as to local and general tonic treatment.

One evening he was called hastily to see the case, and found that there was a discharge of water from the uterus, and that she was pregnant, and that an obstruction was about to supervene. The following night, was called again to see her, and found her complaining of something pro-

truding from the vagina. On examination, he found a large tumor protruding, apparently as large as a new-born infant's head at full term. It was of a pear shape, the stem end being in the vagina.

A tense congested state of the tumor, with a smooth and tough exterior, was transmitted to the touch. The large end, or base of the tumor was indented and curved in upon itself, and from this part protruded the lower half of a small fœtus.

There was no pain complained of by the patient; no expulsive action of the uterus; only a sense of fullness and throbbing, with discomfort, existed. Physical exploration revealed the uterus to be within the labia, the os enclosing the head of the fœtus with a vice-like grip. An attempt to relieve the head failed, from the firm, constricted condition of the os that held it.

The diagnosis of the case was abortion, with prolapse of the vagina and uterus.

Treatment.—Not being able to relieve the fœtal head, the fœtus were returned, together with the prolapsed vagina, within the labia. This was not attained without some trouble in the tumor, because in a measure strangulated. After it was returned the prolapsed organs failed to remain in situ unless supported by the hand. This support had to be constantly given until the fibres of the os relaxed sufficiently to enable the fœtal head to escape from its embrace. The hips were elevated and the usual treatment given for such conditions; after the cessation of the lochia strong astringent washes for the vagina were prescribed, with general tonic treatment, diet, regimen, etc. The result was good, and the patient recovered without any further trouble.

The cause of this condition was, in his mind, due to a gradual loss of tone in the vaginal walls and subjacent structures, pregnancy furnishing the exciting cause. He thought that during the period that elapsed from her last pregnancy (eight years) a variety of changes in the structure of the parts occurred. The absorption of surrounding tissue and kindred changes that impair the natural strength and tonicity of the vaginal canal might furnish the predisposing cause. The development of the canal and increased weight of the uterus came from the pregnant condition. The enfeebled condition of the sphincter muscles might unite in producing this condition. The occurrence of absorption, uterine and abdominal contractions forcing the abdominal viscera down the canal, might also produce this state of affairs.

STATED MEETING, *June* 1, 187[illegible].

Dr. Neil, Vice President, in the chair.

Case of Hemiplegia.—Dr. Norman presented a pathological specimen of a brain removed from a man sixty years of age who became hemiplegic three years ago. No complete history of the case could be obtained, except that he had lapses of consciousness—severe pain in the head. A year ago he could not speak or swallow; three weeks ago was struck on the side of his head; no fracture of the skull, but considerable ecchymosis at the place of injury. Post-mortem showed some softening of the right crus cerebri; some atheromatous degeneration of the arteries; all the arteries of any size were plugged with thrombi.

Case of Abortion.—Dr. Pooley presented an ovum, with its membrane intact, of two months' impregnation. He said three weeks ago an attempt at abortion was made, which was followed by a slight oozing of blood for a week or two. Last week a severe hæmorrhage took place, with great pain. He then removed the ovum entire. It showed several punctures, which, he thought, were made by an instrument; there were also deposits of fibrin, which were evidences of recent inflammation.

Necrosis of the Carpus and Metacarpus.—Dr. Pooley reported the following case: Nine months ago the patient fell and sprained his wrist; the joint now is inflexible; great swelling on the dorsum; has pain and fever. Has taken iron and quinine for a long time. There were no sinuses. He made two lateral incisions, and all the bones of the carpus and ends of the metacarpal bones were removed, some of them, piece-meal.

Since the operation the patient has done badly; has no pain or fever, suppuration normal, and pus healthy. He has gradually sank into a condition of lethargy and coma, preceded by delirium. He has no chills nor sweating; pulse 92, full and regular; arteries are hardened by calcification. He lies in a semi-conscious state; talks deliriously; his face is flushed, but not hot; refuses to take food. He thought his condition seemed to be that of cerebral anæmia.

Case of Procidentia Uteri.—Dr. Loving gave an outline of a case of procidentia uteri, in which pregnancy took place, and which he thought a rare occurrence. The lady was twenty-one years of age; has been married eighteen months. When he first saw her she was pregnant; complained of great pain in the hips; she was unable to walk, and had great difficulty in voiding urine. She objected to an examination, and went on in this condition to her full term. He was in attendance at her labor, and she refused again to have the necessary examination made, until she was well advanced in labor. Immediately within the vulva the os uteri presented; the labor went on satisfactorily and she gave birth to the child. Every thing went on well after the labor, except that the uterus did not return to its place.

Sometime after this the patient went to Illinois to consult a gynæcologist for treatment, but the last time he had heard of her she was hardly able to walk. He also remarked that this lady suffered with procidentia uteri long before her marriage, and he considered it an uncommon case.

Laceration of the Perinæum.—Dr. Loving said that modern teachers in obstetrics urge the propriety of attending immediately to laceration of the perinæum. In his time he was taught to wait until after the labor; until the wound had healed over. He had a case once which he stitched, he put in three stitches. His teacher advised him to take them out, which he did.

Two weeks ago he was called to attend a lady in labor—primipara of a rigid fiber—tense habit; at the last pain laceration of the perinæum occurred, not involving the rectum. He immediately put in three stitches, which were removed on the fifth day, the laceration being entirely healed. This he considered exactly the thing to do, and to do it at once.

Drs. Neil and Loving, delegates to the American Medical Association, then gave an abstract of the proceedings and workings of the different sections of the twenty-eighth annual meeting of the Association, held lately in Chicago, Illinois, for which a vote of thanks was tendered them by the Academy.

STATED MEETING, *June* 15, 1877.

Dr. Neil, Vice-President, in the chair.

Fracture of the Clavicle.—Dr. Kroesen reported the case of a child, nine years of age, who fell from a wagon to the ground; the shock of the fall was received on the back, producing a transverse fracture of the clavicle on the opposite side of the shoulder.

Dr. Pooley said this was an interesting case, and one of unusual occurrence. He thought the fracture was produced by violent contraction of the muscles of the back, and that it could only be accounted for in this way.

Drs. White and Loving also said the fracture in Dr. Kroesen's case could only be accounted for by muscular contraction.

Cholera Infantum.—Dr. Loving then inquired of the members of the Academy whether cholera infantum and acute inflammatory diseases of the alimentary canal were not prevailing more than usual in the city at this time, and what was their experience with it? He thought it rather early in the season for these diseases, but he has observed that the first warm weather in June generally brings cholera infantum, cholera morbus, and acute diarrhœa, and that if the weather continues very warm these diseases continue through July and August; if however, it gets cool, dysentery will appear, and if it changes again to a warmer temperature, cholera infantum and cholera morbus come on again. He said if this be

true, we can, to a certain extent, prevent and avoid them, and prepare and regulate ourselves for them.

Drs. Nunnemaker, Kroesen, Neil, White, and Stein, then related their experience with these diseases.

Dr. Nunnemaker inquired of Dr. Loving whether wet weather had any influence on cholera infantum, and how would he explain it?

Dr. Loving said he did not know if moisture had any influence; if it had, he had no explanation; but he had observed that the temperature of the weather produced the changes which he alluded to. He also observed that in wet, cold summers dysentery is more common than in dry summers.

Dr. Fullerton wished to know whether the treatment could not be improved; the great cause was *heat*, and if we could get command of the temperature, we would have better results in our treatment. If we could devise some apparatus so as to regulate the temperature of rooms, he thought it would influence very favorably this disease.

Dr. Pooley said his experience with cholera infantum was, that if the weather became very warm, suddenly in June, it produced cholera infantum, and also that he was always more solicitous about those cases than with those that occurred later in the season.

In regard to treatment, two things were very important. The first was that concerning the subnitrate of bismuth. If this agent was rightly used, it was a very valuable remedy, and if not, it was one of the most valueless. In small doses of five or six grains, it was of but little value, but in half-drachm doses it was an admirable remedy. He then related the following case: "Was called to see an infant in the evening, three months old; it looked just as if it was dying; vomiting and purging incessantly; had all the symptoms of collapse; large discharge, of rice-water character; ordered half-drachm doses of subnitrate of bismuth to be given every hour.

The result was, in the morning the child was almost well, the vomiting and purging had ceased.

In older children larger doses must be given, and the remedy must be pushed to do good. If the bismuth does no good in twelve hours we must resort to some other remedy.

The second thing to do is to use cold water compresses to the abdomen. The child should lie on a hard bed, be lightly covered, and the abdomen covered with cold compresses.

This relieves the pain and heat of the abdomen. He also remarked that there was something remarkable in the slight changing of location. Sailing down a river, or visiting some island, or going half a mile into the country had a very marked influence over the disease. When we have

severe and threatening symptoms; when the child is exceedingly emaciated, and after the acute symptoms have passed, then he would recommend salicine, one grain every two or three hours, and to annoint the whole body with cod-liver oil.

Dr. Kroesen spoke of the influence of locality, and agreed with Dr. Pooley's remarks. He thought it had a great influence over this as well as in some other diseases.

Dr. Loving said that in the use of bismuth we must recollect that it is sometimes adulterated with arsenic, and the large doses might prove injurious. It was also a question with some whether the beneficial effects were not due to the arsenic rather than to the bismuth. He also had observed that after the administration of bismuth the breath had an alliaceous odor, and that it could generally be observed in a few hours after taking bismuth. Another important thing in the acute stage of cholera-infantum was the admin istration of cold water. The almost incessant craving for water was, to him, a most painful symptom. He had labored under the delusion that it aggravated the vomiting and the disease. He now allows his little patients to drench themselves with water; he gives them as much as they will drink.

Ohio State Medical Society.—Dr. Pooley then, at the request of the Academy, gave a short sketch of the proceedings of the Ohio State Medical Society held during the week at Put-in-Bay. He said the meeting was not large but pleasant, everything was pleasant, agreeable, and harmonious. There was not a breath of ethics, etiquette, or professional honor. The Society will meet in Columbus on the third Tuesday in May, 1878.

STATED MEETING, *June* 22, 1877.

Dr. P. M. Wagenhals, President, in the chair.

Case of Iodism.—Dr. Oleson reported a case of iodism, in which five doses of iodide of potassium, five grains each, produced this result. It was given for an ordinary eruption on the leg. The symptoms were lachrymation, swelling of the eye-lids, coryza, and an acne eruption over the body.

Dr. Loving inquired whether the patient had taken iodine or mercureals before, or whether it was not due to an idiosyncrasy. He referred to a case of arsenical poisoning, which was produced by taking three drops of Fowler's solution.

Dr. Oleson said she had taken no medicine for fifteen months.

Dr. Pooley thought this an interesting and important case. Some persons can take no iodine at all, others can take one hundred grains of iodide of potassium at a dose. It is no more likely to produce iodism in

large doses than small ones. A good plan is to commence with small doses and increasing them rapidly. In syphilis there is a point of tolerance, and when this point is reached the symptoms disappear.

Case of Poisoning.—Dr. Loving reported briefly a case of poisoning with rhus toxicodendron. He said that a solution of iodide of potassium will relieve it, but from his experience he found that

Sodæ sulphite, ʒii.,
Chloral hydrate, ʒi.,
Aqua, oi.,
M. For a lotion.

a much better remedy. It relieves in a very few hours.

Chronic Bright's Disease.—Dr. Norman reported the following case: Mr. ———, aged forty years, two years ago had typhoid fever. A week ago, in the evening, was taken with a chill, followed with fever, pulse 120, temperature 103½. Supposing it to be an ordinary intermittent, prescribed a cathartic and thirty grains of sulphate of cinchonidia. Next morning better—next day had suppression of urine, and the next morning symptoms of uræmic poisoning. A tablespoonful of urine was obtained by the introduction of a catheter, and upon examination it was found to be highly albuminous. The symptoms soon were double vision, delirium, contracted pupils. He grew gradually worse and died.

Post ortem: Kidneys much enlarged with chronic inflammation. The patient died from chronic Bright's disease.

Dr. Pooley said we should never prescribe for patients who complain of severe and persistent cephalalgia until we first examine the urine. This should be the rule of our lives. He also thought Bright's disease an unfortunate name.

Dr. Loving said, a few hours before death several things in this case were important and interesting to him. What was the cause of the extreme itching of the skin? What was the cause of the extreme contraction of the pupils, and what was the cause of the extreme jaundice of the body? The liver showed no disease, and the patient had taken no morphia for twenty-four hours. Could acute or chronic inflammation of the kidney cause these symptoms?

Cancer of Stomach and Liver—Case of Acute Peritonitis.—Dr. Frankenberg presented a pathological specimen of cancer of the stomach and liver, removed from a patient who died in St. Francis Hospital. The entire surface of the stomach was ulcerated, involving the spleon to some extent. The liver was full of nodules. He also presented the kidneys of a patient who died of acute peritonitis. The abdomen was very much distended, pus in the abdominal cavity, the peritoneum was inflamed and injected. The appearance of the kidneys was that of what is called the "white

kidney." On section it showed fatty degeneration. He also stated that the patient had pericarditis, there being four or five ounces of serum in the pericardium.

Dr. Pooley said the specimens were interesting and instructive. The death of the patient from acute peritonitis—it was not suspected at all—but the post-mortem showed marked peritonitis. The patient died suddenly; he had neither pain nor tenderness. He stated that this is the condition in some cases, especially in those of chronic kidney disease. The peritonitis is provoked by the kidney disease. In such cases, we should be on the look out, especially if there is albuminous urine. He stated that the thermometer might have told what was going on. The suddenness of death was an interesting fact. He thought that a splanchnic shock was the explanation of the sudden death.

In regard to the cancer specimen, he said that there was no persistent vomiting as there generally is in cancer of the stomach alone, and that this was generally so in cases of cancer of stomach and liver. The occurrence of cancer of the stomach and liver he thought a rare event. He then raised the question as to which was the primary lesion.

The subject was further discussed by Drs. Pooley, Reed, Frankenberg, Neil, and Stein.

STATED MEETING, *July* 6, 1877.

Dr. P. M Wagenhals, President, in the chair.

Prophylaxis of Cholera Infantum.—Dr. Oleson read a paper on this subject. He gave a short sketch of the disease—stated that it carried off seven-ninths of the infants in the four hot months of the year. The first prophylactic was proper alimentation; the second, protection from excessive heat; and the third prevention of dental irritation.

[The paper was referred to the Editor of the Ohio Medical and Surgical Journal for publication, and appears in this number.]

Dr. Kroesen reported several cases of cholera infantum. He thought improper alimentation the great cause in these cases.

Dr. Loving thought the cause in the main was the hot weather. The disease generally prevails from the middle of June to the middle of September, and it could only be explained on the supposition of the excessive heat. Heat is the main factor—food and dental irritation are secondary causes. He corroborated every word that was said in favor of the bromide of potassium in the paper.

Dr. Oleson said, as mothers were in the habit of giving their infants soothing syrups and cordials and a variety of domestic teas, that it was a far better practice to give them bromide of potassium. He also believed in dental irritation as a cause, and had relieved many children by the practice as advocated in his paper.

The subject of proper food for infants, in connection with cholera infantum, was further discussed by Drs. Frankenberg, Oleson, Loving, and Wagenhals.

Resolutions.—The committee appointed to draft resolutions on the death of the late Dr. Otto Zirkle, reported the following:

WHEREAS, It has pleased Divine Providence to remove from his sphere of duty and usefulness the late Dr. Otto Zirkle, a member of the Academy; therefore be it

Resolved, That we take pleasure in recognizing the ability and worth, both public and private, which distinguished the character of the lamented deceased.

Resolved, That we deeply sympathize with his family and friends in their affliction.

Resolved, That a copy of these resolutions be transmitted to the family of the deceased.

J. C. KROESEN, M.D.,
O. FRANKENBERG, M.D.,
GEO. S. STEIN, M.D.,
Committee.

New Members.—Dr. R. Gundry, Dr. D. A. Morse, and Dr. H. G. Landis were reported upon favorably by the committee on admissions, and they were then unanimously elected active members of the Academy.

Adjournment.—Dr. Neil moved that when the academy adjourns, it adjourns not to meet again until the first Friday in September. Adopted.

On motion, the Academy then adjourned to meet again September 7, 1877.

CENTRAL OHIO MEDICAL ASSOCIATION. REPORTED BY GEORGE S. STEIN, M.D., ASSISTANT SECRETARY.

STATED MEETING, *June* 7, 1877.

The Central Ohio Medical Association met, pursuant to adjournment, at Council Chamber, City Hall, and was called to order by the President, Dr. P. M. Wagenhals.

Dr. Gay stated that as there appeared to be no paper he would relate a *Case of Perforation of the Bowels* in a farmer near this city, happening some years since, and brought about by his accidentally swallowing the egg of a bot-fly, and thereby generating a bot larva, which brought on severe pain, inflammation and perforation of the lower bowel.

After some weeks of severe distress the worm discharged through the opening made in the bowel, and after quite a good deal of watery discharge from the opening in the bowel and through the bladder the man recovered and is now well.

He thought this instance should be a warning and a caution to those who handle horses to beware of the eggs or nits of the bot-fly.

Dr. Pooley thought the case a singular one, and described the effects produced by larvæ from the eggs of the bot-fly in the stomach and bowels, and the way to get clear of them.

Dr. Loving then read the history of a case of

Extra-Uterine Pregnancy, which he had reported at the last meeting, and described the good effects of the treatment of the case by electricity, as instituted by him.

He promised a further report (by permission), and thought success would follow the treatment pursued.

Dr. Wirth spoke of the difficulties in making out the diagnosis.

Dr. Loving thought he had described the case so fully in his first report that no one who heard it could well doubt the diagnosis of the case.

Dr. Pooley spoke in corroboration of the views of Dr. Loving, and described more fully the prominent symptoms by which such cases are determined.

Dr. Wirth questioned, from what he had heard from the reading of Dr. Loving's first report, the propriety of deciding, positively, on the diagnosis of the case.

Dr. Loving then read from his first paper the description of the symptoms of the case, and the means employed to determine the diagnosis, and that the conclusion was arrived at by considering the case in all its bearings, and asked Dr. Wirth to give a diagnosis if he thought it any thing else. He spoke of the progress of the case, and of the treatment, and that he had no other motive than to give all the particulars in the case as being a singular and important one, and to forward the progress of medical science, and that the result would be reported to the Society hereafter.

STATED MEETING, *July* 6, 1877.

Dr. A. Follett, of Granville, Ohio, called to the chair.

Dr. D. N. Kinsman read a paper on

Salicylic Acid.—He gave the history of its origin, mode of preparation, its solubility, tests and therapeutics. He stated that in eighty per cent. of all cases it reduces the temperature, while in twenty it increases it. It has accumulative effects. The favorite mode of administration is ten grains every hour. It has been used in a great many diseases, but its greatest reputation is in acute rheumatism, relapses being much more infrequent when treated with salicylic acid than with alkalies. It has some value in rheumatism, but is far from being a specific.

In scarlet fever, diphtheria, and typhoid fever, he thought it a very valuable addition to our treatment.

Dr. Helmick relates the history of a case of acute rheumatism, in which he gave salicylic acid a fair trial, with but little benefit. He then gave salicine, and blistered the joints once in forty-eight hours; it produced great relief.

Dr. Turney stated that salicylic acid had great value in acute rheumatism. He gave the history of a case of rheumatic pericarditis, in which he gave ten-grain doses, and in six hours it reduced the temperature greatly, and by the third day the patient was well. In another case, in six hours it produced great relief of pain. He knew no remedy so valuable as salicylic acid in acute rheumatism.

Dr. Kinsman said that it is known to have produced relief by a single dose of ten grains. It reduces temperature more promptly than any other agent, and he knew of no treatment that relieved the pain so quickly.

But in diphtheria the most striking statements were made—in one hundred cases only three deaths occurred.

Dr. Landon was not prepared to accept this statement of its value in diphtheria. He believed that the disease was due to a blood poison, and that it must be treated constitutionally; local remedies will not do. In rheumatism his practice was with alkalies and morphia; in diphtheria, iron and quinine.

Dr. Turney called attention to the power of salicylic acid decomposing the urine, this he thought a valuable hint in regard to its use. It also had considerable resemblance to quinia in reduction of the temperature. He preferred quinine as the next best remedy for the treatment of rheumatism.

Dr. Turney offered the following resolution:

Resolved, That the Executive Committee select some member at each meeting of this society, whose duty it shall be to choose and announce to the society such medical or surgical subjects as he pleases, and prepare a suitable written essay for the following meeting of the society; that this essay should be the subject of discussion for that meeting, and that any member thus selected failing to furnish such essay at the meeting designated, shall pay a fine of three dollars into the treasury of the society for such failure, unless released from such fine by a majority vote of the society.

Election of Officers.—Dr. Landon, Chairman of the Executive Committee, announced, as this was the annual meeting, the first thing in order at the afternoon session was the election of officers.

The following officers were then elected for 1877:

President—Dr. P. M. Wagenhals.
First Vice-President—Dr. A. Follett.
Second Vice-President—Dr. Z. F. Guerin.
Secretary—Dr. O. Johnson.
Assistant Secretary—Dr. G. S. Stein.
Treasurer—Dr. T. B. Asbury.
Board of Censors—Dr. C. P. Landon, Dr. D. Halderman, Dr. Z. F. Guerin.

Dr. Turney then read a paper on *Solid Food in Typhoid Fever.* He discussed the rationale of digestion, and thought it was an error that fluid food was preferable in a great many diseases, and in typhoid fever particularly. He claimed that solid food was preferable in all cases of this disease. The paper was received and referred for publication.*

Dr. Kinsman said he was long since a convert to the theory of digestion as promulgated in Dr. Turney's paper. He accounted for the diarrhœa in typhoid fever by the excessive production of heat.

Dr. Turney said that typhoid fever was self-limited, as much so as measles, and that there was such a thing as starving a patient to death, as the symptoms were similar to those of typhoid fever itself.

Dr. Hamilton exhibited a pathological specimen of ovarian tumor. The tumor weighed fifty pounds. He also exhibited the pedicle from which the tumor was developed.

Dr. Hamilton then read a paper on *Plaster of Paris Dressings in Fractures.* He said he had used this dressing in twenty cases. In several fractures near the elbow joint, in fractures of the thigh, and in fractures of the leg, he had succeeded admirably with this kind of treatment. He does not think the plaster dressing applicable in compound fractures.

STATED MEETING, *August* 2, 1877.

Dr. Z. F. Guerin, Vice-President, in the chair.

Fistula in Ano.—Dr. J. Helmick reported two cases of fistula in ano, which he was treating by dilatation. He used the sea tangle tent, with carbolic acid and the red oxide of mercury. He then inquired whether this was the right practice, and whether these fistulas would heal from the bottom without resorting to an operation. He said he used the tents simply to dilate, so as to apply remedies to the part to produce granulations.

Dr. Beverly reported a case of a similar character. The patient was a female, had a cough, was of a scrofulous diathesis, being reduced in health considerably. An abscess formed in ilio cæcal region, which he lanced. There was no opening in the intestine. A large quantity of pus

* See present number of this Journal.

was discharged from the abscess. He injected carbolic acid and bismuth several times a day, which healed it up very rapidly.

Dr. Thompson reported a similar case that occurred in 1849. He gave the history and treatment, and stated that the patient was cured spontaneously as a result of an attack of cholera.

Dr. Kinsman read a paper on *Pott's Disease of the Spine.* He gave the history of the case, and its treatment with Taylor's spinal brace, Sayre's splints, and the plaster of paris jacket, which benefitted and improved the patient greatly, and in fact seemed to have cured him. He stated that after this result had been obtained, the patient became tuberculous, and finally died. He claimed that when tuberculosis was developed in the course of this disease of the spine, no remedy or treatment will be of any avail. The paper was received, and the discussion deferred until the next meeting.

Dr. Baldwin read a paper giving the history of a case of

Hair-Pin and Calculus in Bladder.—He exhibited the hair-pin and calculus, and considered the case a singular and unique one. The average thickness of the calculus was about one inch; weight, one and three-fourths of an ounce. The urethra was dilated, and the stone seized with a pair of long forceps. Being too large to pass, an effort was made to break it, which was unsuccessful. It was again seized, and one-half of the pin came away, but the stone could not be extracted. A second effort to break it was more successful, but still it would not pass. An incision in the meatus was then made of an eighth of an inch, and one-half of the stone, containing the remaining half of the pin, was brought away. There was no difficulty in removing the other portion.

Drs. Landon and Gay spoke of other cases.

Dr. Halderman reported on the sanitary condition of the Ohio Penitentiary.

Dr. Beverly reported a case of *phagedenic ulcers*, Dr. Gay a case of *gangrene*, and Dr. Loving on the case of *extra-uterine pregnancy*, of which he made two reports at previous meetings of the Society.

Dr. Wirth reported a case of

Acute Gastritis.—Lady, æt. 48; slender, delicate, of nervous temperament; had been suffering from occasional vomiting for a week before he saw her. He found her retching all the time, having only temporary relief for an hour or two. She stated that she had vomited bilious matter, but when he saw her she vomited nothing but what she took. Pulse never more than 90, and sometimes as low as 70. No excessive pain, but a burning sensation; symptoms aggravated towards evening. Complains also of slight headache, believing it to be a case of remittent fever, he directed his efforts to allay the excessive irritability of the stomach, pre-

scribed small doses of calomel and ipecac, with no effect whatever; then ordered hydrocyanic acid, then chloroform and morphia, then a mixture mainly containing carbolic acid. Quinine was attempted to be administered every day, but all these medicines seem to be absolutely without any effect. Counter irritation to the stomach—mustard and warm application, and ice to allay thirst. Seeing that no medicine nor food was retained, and that she was rapidly losing strength, he directed injections of beef tea to be given and hypodermically one-third of a grain of morphia. Having been informed that she had been in the habit of using morphia, and that she had been formerly treated by Dr. Hamilton for a similar attack, requested a consultation with him. He confirmed the diagnosis, and advised no other treatment. The first injection of morphia having no effect, it was repeated in four hours, and this only procuring a certain degree of comfort and rest, without any narcotic effect. The next morning her condition was as bad as ever, and another injection of a third of a grain of morphia was given. The patient became quiet but weaker, and finally died, remaining perfectly clear in mind until fifteen minutes before her death.

Drs. Beverly, Gay, Farrel, and Stein, discussed the case.

The Society then, on motion, adjourned until the first Thursday of October next.

[Full reports of the Society proceedings will appear in the Journal regularly.]

NOTICE.

One of the advertised numbers (Nov. 1851) of the Ohio Medical and Surgical Journal, with a number of other journals, has been received at Starling Medical College. This donation is from Dr. J. H. Clark, of Mechanicsburg, who will please accept our thanks. If others who now destroy their medical journals would send them to the Library, they will materially assist in creating a collection of journals that will be of great value in the end. Any old books are solicited.

Respectfully,

O. FRANKENBERG, M. D.,
Librarian.

RESIGNATION OF PROF. WORMLEY.

On the 25th of July, Prof. Theodore G. Wormley resigned the Chair of Chemistry in Starling Medical College, which he has occupied since 1854. His career during this long period is well known to the profession. Few men in the United States have reached the same eminence in chemistry, more especially in the chemistry of toxicology.

The Faculty of Starling College naturally regret to part with a colleague so long identified with the institution, and so excellent as a teacher, but they rejoice that Prof. Wormley considers his new position a promotion, and wish his success in Philadelphia may be in proportion to the great elevation which he has attained. If energy of mind and body, unimpaired by years, can elevate the Professor above his present status, there is no doubt that his success is assured.

Starling Medical College is a nursery of medical teachers. A matriculant teaches in Rush Medical College, an alumnus in the Ohio Medical College, and another is at Fort Wayne, and now she is called on to supply the University of Pennsylvania a teacher in one of the most important branches. Her standard has never been lowered, and her aim is now as heretofore to send forth men equal to any position to which they may be called. Regret in parting with Prof. Wormley is softened materially by the fact that the trustees have succeeded in filling the blank in the roster of the Faculty with the name of Prof. Sidney A. Norton, of the Ohio Agricultural and Mechanical College.

Prof. Norton is a genial gentleman and ripe scholar, a facile writer, and a fluent and attractive lecturer, bringing to his new position the experience gained abroad in the laboratories of the German universities, in the lecture room of Miami Medical College, and in the position which he still holds in the Ohio Agricultural and Mechanical College, the laboratory of which is perhaps the finest in the country. The works which he has already completed, and one which will be complete within two months, place him high in rank among writers of educational books. His book on natural philosophy is a model among the many on that subject, and his forthcoming Principles of Chemistry will fill a want long felt among students, especially medical students, and those who contemplate making the science of chemistry a profession. His time is so arranged that it is not possible that the two positions can clash.

With the advantages gained by his connection with the medical college, it will be easily seen that an analytical chemist is ready to fill the place so long occupied by Dr. Wormley.